THE
GEORGE
WASHINGTON
UNIVERSITY

CATALOGUE

THE SUMMER SESSIONS

1958

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THE
GEORGE
WASHINGTON
UNIVERSITY

BULLETIN

VOL. LVII No. 4

THE SUMMER SESSIONS

WASHINGTON, D. C.

PUBLISHED IN JANUARY
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BY THE UNIVERSITY

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1958/59

CONTENTS

PAGE

Calendar of the Summer Sessions vi

The University 1
- The Board of Trustees 3
- Officers of Administration 4
- History and Organization 6
- Academic Status 7
- Location 8
- Educational Facilities 8
- Other Library Facilities in Washington 8
- Research Facilities of Washington 9

The Summer Sessions 11
- Staff of Instruction 13
- Admission 17
- Registration 18
- Fees and Financial Regulations 18
- University Regulations 21
- Veterans Education 22
- Student Life 23

The Colleges, Schools, and Divisions 25
- The Junior College 27
- Columbian College (the senior college) 27
- The Graduate Council 29
- The Law School 29
- The School of Engineering 30
- The School of Pharmacy 31
- The School of Education 31
- The School of Government 32
- The College of General Studies 33
- The Division of University Students 34
- The Division of Special Students 34

Courses of Instruction 35

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CALENDAR OF THE 1958 SUMMER SESSIONS

Date	Day	Occasion
June 16	Monday	Registration for the eight-week term*
June 17	Tuesday	Classes begin
July 4	Friday	Independence Day. Holiday
Aug. 8	Friday	Eight-week term ends Last day for receiving theses for the Master's degrees to be conferred in October
Sept. 5	Friday	Last day for receiving dissertations of candidates for the degrees of Doctor of Philosophy, Doctor of Education, and Doctor of Business Administration to be conferred in October

THE LAW SCHOOL

June 6	Friday	Registration for both sessions
June 9	Monday	First session classes begin
July 4	Friday	Independence Day. Holiday
July 22	Tuesday	End of the first session
July 23	Wednesday	Special registration for students attending second session only
July 24	Thursday	Second session classes begin
Sept. 1	Monday	Labor Day. Holiday
Sept. 6	Saturday	End of second session

THE SCHOOL OF EDUCATION—SPECIAL SESSIONS

June 9	Monday	Registration and first day of classes of the pre-session and twelve-week evening session
June 27	Friday	Pre-session ends
June 30	Monday	Registration and first day of classes of the special six-week session
July 4	Friday	Independence Day. Holiday
Aug. 8	Friday	Special six-week session ends
Aug. 11	Monday	Registration and first day of classes of the post-session
Aug. 29	Friday	Twelve-week evening session and post-session end

Registration for the academic year 1958–59 will be held September 18 and 19.

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* For all schools and colleges offering courses in the Summer Sessions except the Law School and the School of Education.

THE UNIVERSITY

THE BOARD OF TRUSTEES

The Board of Trustees of the University is composed of the President of the University ex officio and the following persons by election:

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* Nominated by the Alumni.

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————————, *Dean of the Law School*
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Warren Reed West, Ph.D., *Dean of the Division of Special Students*

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Walter Harold Hayes, Jr., A.M., *Assistant Dean in the College of General Studies*

John Gage Allee, Jr., Ph.D., *Assistant Dean of the Division of University Students*

THE UNIVERSITY

History and Organization

The idea of a university in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

Columbian College in the District of Columbia was chartered by an act of Congress of February 9, 1821. In 1873 the name was changed to "Columbian University" and in 1904 to "The George Washington University".

The George Washington University includes fourteen colleges, schools, and divisions, as follows:

The Junior College offers the work of the first two years of the four-year college program in the liberal arts and sciences and two years of preprofessional work. Each of these curricula leads to the degree of Associate in Arts. It also offers two-year terminal curricula. Those in Accounting and Secretarial Studies lead to the degree of Associate in Arts; those in Home Economics, Medical Technology—Basic Course, and Physical Science lead to the degree of Associate in Science.

Columbian College offers the work of the junior and senior years of the four-year college program in the liberal arts and sciences leading to the degrees of Bachelor of Arts and Bachelor of Science. It also offers the studies leading to the degrees of Master of Arts and Master of Science in the fields of the liberal arts and sciences.

The Graduate Council offers a program of advanced study and research leading to the degree of Doctor of Philosophy.

The School of Medicine offers work leading to the degree of Doctor of Medicine.

The Law School offers professional and graduate courses leading to the degrees of Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

The School of Engineering offers courses leading to the degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering, Master of Engineering Administration, and Master of Science in Engineering.

The School of Pharmacy offers courses leading to the degrees of Bachelor of Science in Pharmacy and Master of Science in Pharmacy.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education, Bachelor of Science in Home Economics, and Bachelor of Science in Physical Education, and graduate studies leading to the degrees of Master of Arts in Education and Doctor of Education.

The School of Government offers undergraduate programs of study in Foreign Affairs, Public Affairs, Accounting, Business Administration, and Statistics, leading to the degree of Bachelor of Arts in Government. Graduate work is offered leading to the following degrees: Master of Arts in Government in the fields of Foreign Affairs, Public Affairs, Economic Policy, Accounting, Business and Economic Statistics, Counseling, and Psychometrics; Master of Arts in Public Administration; Master of Arts in Personnel Administration; Master of Business Administration; and Doctor of Business Administration.

The College of General Studies includes the following divisions: the Off-Campus Division, the Campus Division, and the Division of Community Services. The college is designed for adults, and sponsors a program of credit and noncredit courses throughout the year.

The Division of University Students makes available courses for mature students not candidates for degrees in this University.

The Division of Special Students makes available courses for students in the process of qualifying for degree candidacy.

The Division of Air Science offers a program of Air Force ROTC training which is integrated with the curricula of the colleges and schools of the University and leads to appointment as a commissioned officer in the United States Air Force Reserve.

The Summer Sessions.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association. The School of Medicine is a member of the Association of American Medical Colleges, and is one of the medical colleges which have been continuously approved by the American Medical Association. The School of Pharmacy is accredited by the American Council on Pharmaceutical Education as a Class "A" school. It is a member of the American Association of Colleges of Pharmacy. The School of Engineering is on the accredited list of the Engineers' Council for Professional Development. The School of Education is a charter member of the American Association of Colleges for Teacher Education and is accredited by the National Council for the Accreditation for Teacher Education.

LOCATION

The George Washington University is in downtown Washington, four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible to the University are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor; as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

EDUCATIONAL FACILITIES

Buildings, grounds, and equipment of the University are valued at approximately $23,000,000. The buildings of the colleges, schools, and divisions offering Summer Sessions work are in the vicinity of Twenty-first and G Streets NW.

The University Library.—The University Library contains 322,000 volumes and, with the exception of the law and medical collections, is housed in the Library Building.

Regulations governing the use of the library, the circulation of books, and the use of reserve books and periodicals are available at the service desks of the Library.

OTHER LIBRARY FACILITIES IN WASHINGTON

The student has access also to the Library of Congress, the Public Library of the District of Columbia and its branches, the Library of the Pan American Union, the Library of the Bureau of Railway Economics, the Library of the United States Department of Agriculture, the Library of the United States Office of Education, the National Library of Medicine, the Library of the Smithsonian Institution, and many other great special collections of the government departments.

RESEARCH FACILITIES OF WASHINGTON

The arrangement of the summer schedule of classes permits the full-time student to avail himself of the opportunity to study, at first hand, the working of the Federal Government and so to form a background for intelligent and useful citizenship.

In the departmental libraries of the Federal Government are a multitude of reports made by eminent specialists in all fields of science on the results of study and research in the bureaus, experimental stations, laboratories, museums, and observatories of the Nation.

In addition to the governmental collection the student has access to the research facilities of such scientific and educational groups, whose headquarters are situated in Washington, as the Carnegie Institution, the American Council on Education, the American Council of Learned Societies, the National Academy of Sciences, the National Research Council, the National Education Association, and the National Geographic Society.

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THE
GEORGE WASHINGTON UNIVERSITY
INVITES YOU TO STUDY THIS SUMMER IN THE
NATION'S CAPITAL

The beautiful Blue Ridge Mountains of Virginia and the famous Maryland beaches are only an hour's drive from the George Washington campus in the heart of the Nation's Capital.

The five-day academic week at The George Washington University leaves students time to visit the historic shrines of the Nation's Capital, to attend such events as the concerts of the National Symphony Orchestra, and to participate in the Summer Sessions recreation programs.

You will never forget your summer of study at the campus four blocks from the White House.

THE SUMMER SESSIONS

1958

STAFF OF INSTRUCTION IN THE SUMMER SESSIONS

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ussell Bradford Stevens, Ph.D., *Professor of Botany*
ames Whitley Suber, A.M., Ed.D., *Lecturer in Education*
afael Supervía, Doctor en derecho, *Associate Professor of Spanish*
obert Sylvester, A.M., *Associate in Psychology*
aymond Edward Thomas, A.M., *Instructor in Statistics*
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illiam Lewis Turner, Ph.D., *Associate Professor of English*
urtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*

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Donald Stevenson Watson, Ph.D., *Professor of Economics*
Warren Reed West, Ph.D., *Professor of Political Science*
Harland Walter Westermann, A.M., *Assistant Professor of Geograph*
Glen Earl Weston, B.S., LL.B., *Associate Professor of Law*
Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*
Helen Bates Yakobson, B.S., *Assistant Professor of Russian*
Raymond Warren Young, Ph.D., J.D., *Assistant Professor of Law*

THE SUMMER SESSIONS

The work of the Summer Sessions has been planned to meet the needs of full- and part-time students.

During the summer of 1958, courses are offered in the Junior College, Columbian College (the senior college), the Law School, the School of Engineering, the School of Pharmacy, the School of Education, the School of Government, and the Division of Air Science.

ADMISSION

An applicant for admission must obtain from the Office of the Director of Admissions an application blank which he must fill out completely and return with the application fee of $5. A recent photograph, with signature, of the applicant must be attached to the blank.

ENTRANCE REQUIREMENTS

The Student Seeking a Degree

An applicant from a secondary school must send the high school record form furnished by the University to his high school principal, with the request that the principal fill out the form and mail it direct to the Office of the Director of Admissions.

An applicant who has previously attended an institution of higher learning should request the registrar of that institution to mail direct to the Office of the Director of Admissions a transcript of his record. If he has attended more than one such institution he must request the registrar of each institution to send to the Office of the Director of Admissions a transcript of his record, *even though credits were not earned*, together with an honorable dismissal.

Entrance requirements are stated in this bulletin under the various colleges, schools, and divisions.

The Student Not Seeking a Degree

Students 21 years of age or over who are not interested in working or a degree in this University may be considered for admission to the Division of University Students to take courses for which they have dequate preparation, as evidenced by previous scholastic records.

Students under 21 years of age who meet the entrance requirements f the Junior College but who are not seeking degree candidacy at this University may be admitted to the Division of University Students to ursue programs of study approved by the Dean.

In special instances, with the permission of the instructor, a perso who has been admitted to the University may be registered as an audito in a class without being required to take active part in the exercises o to pass examinations, but no academic credit will be allowed for suc attendance. Students in good standing and matriculated for degrees i other institutions who wish to take certain courses in this Universit will be admitted to the Division of University Students for the summe only, to the extent that the facilities permit. In such cases transcripts o record are not required.

REGISTRATION

Before a student may register he must have satisfied the Office o Admissions that he is qualified to enter the University.

A student previously matriculated in the University but not in attend ance during the term preceding this registration must file an applicatio for readmission in advance of registration.

Registration for both sessions of the Law School summer term wi be held June 6. *Summer students planning to take the New York Ba examination must register at this time for both sessions and complete bot* Students wishing to attend only one session may register on June for the first or second session, or register on July 23 for the secon session. Tuition fees will be payable by the session.

For registration, students should report to the Office of the Registrar, Building C, 2029 G Street NW., between 9:00 A.M. and 7:00 P.M., o the dates stated in the Calendar.

CHANGES IN PROGRAM OF STUDY

Changes in programs of study may be made only with the permissio of the adviser or major professor and the dean or director of the colleg school, or division concerned.

FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees ha been adopted:

TUITION FEES

For each semester hour† for which the student registers (except for work in the Law School, for courses in Departments of Instruction in the School of Engineering, for courses in the College of General Studies, for work toward a Master's degree in En-

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* Registration for the Law School is conducted in Stockton Hall, 720 Twentieth Street

† Payment of tuition for the Master's thesis entitles the candidate, during the academic of registration, to the advice and direction of the member of the faculty under whom the is to be written. In case a thesis is unfinished, an additional successive academic year ma granted without further tuition payment. If the preparation of the thesis extends beyon second academic year, it must be registered for again, and tuition paid on the same ba for a repeated course.

gineering, and for work taken by a candidate for a Doctor's degree)	$18.00
For each semester hour for which the student registers in the Law School	20.00
For each semester hour for which the student registers for courses in Departments of Instruction in the School of Engineering	20.00
For the degree of Doctor of Philosophy, Doctor of Education, or Doctor of Business Administration:	
For work* leading to and including the Council Fellowship or General examination †	540.00
For work leading to and including the final examination †	540.00
For the degree of Doctor of Juridical Science:	
For work leading to and including the final examination †	540.00
For the degree of Master of Engineering Administration:	
For work leading to and including the Comprehensive Examination †	660.00
For the degree of Master of Science in Engineering:	
For work leading to and including the Comprehensive Examination †	720.00

ADDITIONAL COURSE FEES

In certain courses additional fees such as laboratory and material fees are charged as indicated in the course descriptions. These fees are due with the tuition fee for the course. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee, the individual student will be required to pay such additional charges as are determined by the department concerned.

GRADUATION FEES

Wherein the degree of Associate in Arts or Associate in Science is granted	10.00
Wherein a degree other than the Associate in Arts or Associate in Science degree is granted	25.00
Wherein an Advanced Professional Certificate in Education is granted	25.00
EE FOR BINDING MASTER'S THESIS	6.00
EE FOR PRINTING SUMMARY OF DOCTORAL DISSERTATION	85.00

ECIAL FEES

Application fee, charged each applicant for admission, nonrefundable	5.00
Scholastic-aptitude test fee (when required for admission)	3.00
Late-registration fee, charged each student who fails to register within the designated period	5.00
Change fee, charged each student for each change in program involving one course or more than one course	2.00
Withdrawal fee, charged each student who preregisters and withdraws prior to the regular registration	5.00
Service fee, charged each student for late payment of tuition (see "Payment of Fees")	2.00
Reinstatement fee, charged each student who is reinstated after suspension for delinquency in fees	5.00
For each examination to qualify for advanced standing and for each special examination	5.00
Laboratory checkout fee, charged each student in chemistry and pharmacy courses who fails to check out of the laboratory by the time set by the instructor	3.00
Transcript fee, charged for each transcript of record after the first	1.00

This fee does not cover the cost of tuition for undergraduate courses numbered 1 to 100.

When a limited schedule is carried which extends the time of either the preparation period e examination period to more than one year, the proportionate part of the charge may be by the Treasurer.

Registration in the University entitles each student to the followi University privileges: (1) the issuance of one certified transcript record, if and when desired; (2) the services of the Placement Offi (3) the use of the University library facilities, except as otherwise des nated; (4) medical attention and hospital services described below. Th privileges, with the exception of the issuance of transcripts, cease wh the student withdraws or is dismissed from the University.

Medical and Hospital Services.—These services include: (1) thr visits by the University physician or surgeon, office or residence (Distr of Columbia) in any one illness, exclusive of a specialist, surgical oper tion, laboratory, or X-ray examinations; (2) hospitalization, includi board and nursing, in the University Hospital for not more than o week during any twelve-month period—the necessity to be determined the Director of Health Administration. The duration of hospitalizati period (maximum, one week) is also to be determined by the Direct of Health Administration.

The student is allowed, if he so desires, to engage physicians a nurses of his own choice, but when he does so he will be responsible the fees charged.

This medical benefit does not apply to illness or disability incurred p vious to the University term or prior to payment of tuition fees.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-f Street NW. No student is permitted to complete registration or attend classes until all fees are paid. Fees for each session are du advance at the time of registration.

An auditor pays all fees chargeable to the student registered for cr except the late-registration fee.

WITHDRAWALS AND REFUNDS

Registrations are for the session, and no refunds or rebates are allo unless the registration is in advance and the course is dropped before day of registration for the session involved.

A student who preregisters and withdraws prior to the date of r lar registration will be charged a withdrawal fee of $5.

In no case will tuition be refunded because of nonattendance classes.

Payments apply only to the session for which registration charge incurred, and in no case will these payments be credited to another sion or term.

Any student in chemistry or pharmacy who fails to check out of laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a laboratory check-out fee of $3. A student dropping a course before the end of the session must check out of the laboratory at the next scheduled laboratory period.

No permission to withdraw and no certificate for work done will be given a student who has not a clear financial record.

UNIVERSITY REGULATIONS

Students in the Summer Sessions are subject to, and are expected to familiarize themselves with, the University regulations as stated in the general catalogue.

Academic Credit.—The Summer Sessions are an integral part of the University. Academic credit for completed work will be given toward the appropriate degrees in the various colleges and schools of the University in accordance with their separate regulations and requirements.

Residence.—Summer Sessions work may be counted in residence but the candidate for a degree must satisfy the residence requirements of the school or college concerned as stated in the general catalogue.

Amount of Work.—No full-time student may take more than nine semester hours of work during the eight-week session; no employed student, more than six hours.

In the Law School the maximum amount of work that may be taken n both sessions by a full-time student is twelve semester hours; by an mployed student, eight semester hours.

The right is reserved to drop any student whenever, in the interest of he student or the University, the Faculty deems it advisable to do so.

The University is not responsible for the loss of personal property elonging to a student.

The University and its various colleges, schools, and divisions reserve ne right to modify or change the requirements, rules, and fees of the niversity. Such regulations shall go into force whenever the proper uthorities may determine and shall apply to every student of the Uni-ersity.

Detailed information concerning curricula; admission; scholarship re-irements of the individual colleges, schools, and divisions; and require-ents for degrees may be obtained from the general catalogue, which is ailable on request at the Office of the Director of Admissions.

For information concerning the hours at which courses will be offered, nsult the Schedule of Classes for the Summer Sessions which will be ailable in May at the office of the Registrar.

VETERANS EDUCATION

The George Washington University is approved to provide trainin
for eligible persons under the provisions of Public Laws 346, 16, 55
894, and 634. The Office of Veterans Education, Building Q, 2029 H
Street NW., operates as a service bureau for such persons interested i
studying at the University and acts in a liaison capacity between th
University and the Veterans Administration. Here information may b
obtained concerning the educational program of the University and th
procedures for securing educational benefits under the GI and Wa
Orphans bills. Eligible persons will often find it to their advantage t
seek advice at the University Office of Veterans Education before ap
plying to the Veterans Administration for a Certificate.

For complete information concerning eligibility and benefits under th
following public laws, consult the University Office of Veterans Educa
tion, Building Q, 2029 H Street NW. or the Veterans Administratio
Munitions Building, Constitution Avenue at Twentieth Street NW
Washington 25, D.C.

Public Law 634

(War Orphans Educational Assistance Act)

A child of a person who died of a disease or injury incurred or ag
gravated while on active duty in the Armed Forces during World W
I, World War II, or the Korean Conflict may be eligible for educatio
assistance under this Act, if certain age requirements are met. In t
case of a child who has not reached the age of majority, his guardi
must make application for him to the Veterans Administration.

Public Law 346

(World War II GI Bill)

The educational benefits for veterans under Public Law 346 ter
nated July 25, 1956, except as described below.

The Armed Forces Voluntary Recruitment Act of 1945 (Public L
190) provided that persons enlisting or reenlisting in the Armed For
between October 6, 1945, and October 5, 1946, may count the en
period of such enlistment or reenlistment as war service for purposes
GI Bill benefits. Such enlistees have four years from the date that
listment ended to begin training and nine years from that separat
date to complete training under this provision.

Public Law 550

(Korean GI Bill)

In order to be eligible for the benefits under this GI Bill, a vete
must have been in service between June 27, 1950 and January 31, 19
and must no longer be on active duty.

At least thirty days prior to registration the veteran wishing to attend under this GI Bill should apply to the Veterans Administration for a Certificate for Education and Training, for presentation to the University Office of Veterans Education at the time of registration. A photostatic copy of his DD214 must accompany the original application for certification.

Public Laws 16 and 894

(Vocational Rehabilitation)

Disabled veterans desiring vocational rehabilitation under either GI Bill should apply to Veterans Administration for approval of their training objectives at least sixty days prior to registration.

Admission

The entrance requirements for the Junior College, Columbian College, and the School of Government, in other than the preprofessional curricula, have been somewhat modified for veterans who are deficient in the regular requirements for admission, but who have been found by psychological and educational tests able to undertake college work. Veterans who have been enrolled in another educational institution since leaving the service, or who have been out of the service for more than one year prior to the beginning of the semester for which they seek admission, must qualify under the regular admission policies.

Credit for work done in the service schools is granted by the Junior College, Columbian College, the School of Engineering, and the School of Government provided the veteran has not been out of the service for three years or more. To be considered for such credit veterans should submit to the Director of Admissions photostatic copies of their records indicating courses successfully completed with sufficient identification of the course to enable the Admissions Office to locate it in the Guide to Evaluation of Educational Experience in the Armed Forces.

STUDENT LIFE

Social and Recreational Program of the University

The summer social and recreational program includes regularly scheduled social, square, and folk dances on Lisner Terrace. For those who would like instruction and practice in dance, teaching sessions are provided. Get-acquainted teas and a carnival are also included in the program.

During the summer notices of the many recreational and social opportunities offered in the Capital will be posted on a bulletin board in the Student Union.

Living Accommodations

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance. Forms for application, together with detailed information, may be obtained from the Director of Activities for Women, Woodhull House, 2033 G Street NW. or the Director of Activities for Men, Building Q, 2029 H Street NW.

Information concerning private rooming and boarding facilities near the University, for women students twenty-one years of age or older and for men students, may be obtained at the Housing Office, Lisner Auditorium. The reservation of rooms in private houses must be made by students.

All girls, except freshmen, under the age of twenty-one who are enrolled for six or more credit hours of academic work at the university and who are not living with their parents or relatives may live outside the dormitory only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitories except with persons approved by the Director of Activities for Women.

Freshman girls may be domiciled outside the dormitory *only* with their parents or with immediate relatives with the written approval of their parents.

During the summer of 1958 the following residence halls will be open. Meals are served in the Student Union.

Women Students.—Dolly Madison Hall provides double rooms at $33 a month a person.

Men Students.—Welling Hall provides double rooms at $30 a month a person.

John Quincy Adams Hall provides double rooms, each with study alcove and bath. Rooms rent for $37.50 a month a person.

RELIGIOUS LIFE

The University recognizes the contribution that religion can make to the education of its students by encouraging them to participate in denominational clubs of their own choice. National Catholic, Jewish, and Protestant bodies sponsor these religious organizations, which act as links between the University and the local churches. The Director of the University Chapel and the advisers to the various denominational organizations are available throughout the year for consultation on personal problems.

THE COLLEGES, SCHOOLS, AND DIVISIONS

Living Accommodations

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance. Forms for application, together with detailed information, may be obtained from the Director of Activities for Women, Woodhull House, 2033 G Street, N.W., or the Director of Activities for Men, Building [illegible], [illegible] H Street, N.W.

Information concerning private rooming and boarding facilities near the University, for women students [illegible] years of age or older and for men students, may be obtained at the Housing Office, Lisner Auditorium. The reservation of rooms in private homes must be made by students.

All girls except freshmen, under the age of twenty-one who are enrolled for six or more credit hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitory only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. [illegible]

Freshmen girls may be domiciled outside the dormitory only with their parents or [illegible] relatives with the written approval of their parents.

During the summer of [illegible] the following residence halls will be open; meals are served in the Student Union.

Women Students.—[illegible] Madison Hall provides double rooms at [illegible] a person a session.

Men Students.—Welling Hall provides double rooms at [illegible] a person a session.

[illegible] Hall provides double rooms, each with [illegible]. Rooms rent for [illegible] a person a session.

Religious Life

The University recognizes the contribution that religion can make to the education of its students by encouraging them to [illegible] their own choice. National Catholic, Jewish, and Protestant [illegible] religious organizations which are [illegible]. The Director of [illegible] the religious [illegible] consultation [illegible] personal problems.

THE COLLEGES, SCHOOLS, AND DIVISIONS

Information concerning specific requirements for degrees is omitted from this bulletin. For such information, the student is referred to the general catalogue.

THE JUNIOR COLLEGE

The Junior College includes the first two years of college work. Its curricula are intended to continue the studies of a general cultural nature begun in secondary school, and to lay a foundation for the more specialized work which is to follow.

The Junior College also provides the preprofessional work required for admission to the schools of Pharmacy, Education, and Government, and the first two years of the preprofessional work required for admission to the schools of Medicine and Law.

In addition it provides two-year terminal curricula in Accounting, Home Economics, Medical Technology—Basic Course, Physical Sciences, and Secretarial Studies.

The Degrees

The Junior College offers work leading to the degrees of Associate in Arts and Associate in Science.

Entrance Requirements

An acceptable certificate of graduation from an accredited secondary school is required. The acceptability of the certificate depends upon the student's character and the quality of his work.

COLUMBIAN COLLEGE

Columbian College, the senior college of liberal arts and sciences, comprises the work of the junior and senior years and the Master of Arts and Master of Science disciplines.

The Degrees

Columbian College offers work leading to the following degrees: Bachelor of Arts, Bachelor of Science, Master of Arts, and Master of Science. In cooperation with the School of Medicine, Columbian College offers work leading to the combined degrees of Bachelor of Arts and Doctor of Medicine.

UNDERGRADUATE MAJORS

Curricula leading to the degree of Bachelor of Arts are available in the following major fields:

- American Thought and Civilization
- Art:
  - Art History and Theory, Drawing and Painting, Sculpture, and Commercial Art
- Biology
- Botany
- Chemistry
- Economics
- English Literature
- French Literature
- Geography
- Geology
- Germanic Languages and Literatures
- History
- Journalism
- Latin American Civilization
- Mathematics
- Philosophy
- Physics
- Political Science
- Psychology
- Religion
- Sociology
- Spanish American Literature
- Spanish Literature
- Speech
  - Speech
  - Dramatic Art
- Statistics
- Zoology

Curricula leading to the degree of Bachelor of Science are available in the following major fields:

- Biology
- Botany
- Chemistry
- Geology
- Mathematics
- Physics
- Statistics
- Zoology

GRADUATE FIELDS

Graduate work leading to the degree of Master of Arts or Master of Science is offered in the following fields:

- American Literary and Cultural History
- Anatomy
- Bacteriology
- Biochemistry
- Biology
- Botany
- Chemistry
- Chemotherapy
- Economics
- English and American Literature
- English Literature
- French Literature
- Geography
- Geology
- Germanic Languages and Literatures
- History
- Latin American Civilization
- Mathematics
- Pharmacology
- Philosophy
- Physics
- Physiology
- Political Science
- Psychology
- Religion
- Religious Education
- Sociology
- Spanish American Literature
- Spanish Literature
- Statistics
- Zoology

In addition, programs can be arranged in combined fields subject to the approval of the Committee on Studies.

ENTRANCE REQUIREMENTS

For the Bachelor's degrees, the degree of Associate in Arts or Associate in Science based on the appropriate curriculum in the Junior College, or the equivalent, is required. Scholarship requirements may be somewhat higher than those for graduation from the Junior College. For the Master's degrees, an approved Bachelor's degree from an accredited institution and a transcript of studies previously pursued, showing appropriate distribution of courses and a superior quality of work in the major field, are required.

THE GRADUATE COUNCIL

The Graduate Council offers work leading only to the degree of Doctor of Philosophy. Because the basis for work under the Graduate Council is primarily creative research, regular study in specific courses is considered quite incidental and is therefore not emphasized in connection with the curricula of the Summer Sessions. A student wishing to work under the disciplines of the Graduate Council will consult the Chairman of the Graduate Council for information concerning credentials and candidacy.

A pamphlet describing details of the Graduate Council program, together with a current list of fields of research offered by the Council, will be sent upon request to the Office of the Graduate Council.

THE LAW SCHOOL

The Law School offers work leading to the following degrees: Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

See "Registration," on page 18 for provisions applicable to students who plan to take the New York Bar examination.

ENTRANCE REQUIREMENTS

For the Degree of Bachelor of Laws.—A Bachelor's degree awarded upon completion of a four-year course in an approved college or university is required. All pre-legal work must be of a satisfactory quality and distribution. No student will be admitted who has been in attendance at another law school and who is ineligible to return to that school in good standing. From the applicants, a selection will be made by the Committee on Admissions.

The Juris Doctor degree is conferred as a recognition of completion with high rank of the full course, including experience in research and legal authorship. A student does not register as a candidate for this degree until his last year in the Law School.

For the Degree of Master of Laws.—A Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree from a member school of the Association of American Law Schools are required. Candidates for admission must have attained a *B* average on all work done for the Bachelor of Laws degree, except that, at the discretion of the Committee on Graduate Studies, applicants otherwise eligible may be admitted on proof of experience and attainment as an alternative.

For the Degree of Master of Comparative Law.—The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycee, or lyceo (junior college); and (2) graduation in law from a recognized foreign university where training was in Civil Law.

Doctor of Juridical Science.—The following are required: a Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree, earned with high rank, from a member school of the Association of American Law Schools, and outstanding capacity for scholarly work in the field of law.

Unclassified Students.—A person who is in good standing as a degree candidate in another law school which is a member of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student in order to earn credits for transfer to the other law school.

A person who is a member of the bar or a person, not a member of the bar, who is a graduate of a member school of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student.

Unclassified students are required to participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at this Law School.

Continuing Legal Education Students.—A simplified admission and registration procedure is provided for members of the bar desiring to register as continuing legal education students to take courses on a non-credit basis. Members of the bar desiring to register as degree candidates or as unclassified graduate students should file the regular application for admission form.

THE SCHOOL OF ENGINEERING

The School of Engineering offers courses leading to the degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering, Master of Science in Engineering, and Master of Engineering Administration.

ENTRANCE REQUIREMENTS

For the Bachelor's Degrees

Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering.—An acceptable certificate of graduation from an accredited secondary school, or the satisfactory passing of College Entrance Board examinations in secondary school subjects selected with the approval of the Director of Admissions is required.

Nine and one-half of the fifteen units required for entrance must be distributed as follows: three in English, two in algebra, one in plane geometry, one-half in plane trigonometry, one in physics or chemistry, and two in one foreign language or history. A graduate of an approved high school who does not offer for admission the particular subjects required for the engineering curriculum, but who does present not less than fifteen acceptable units, may be admitted on condition, if such deficiency in the distribution of units does not exceed two units.

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be assigned by the School of Engineering to the extent that the work taken at previous institutions meets the requirements for the degree sought at this University, and subject to the general University regulations concerning satisfactory subsequent work.

THE SCHOOL OF PHARMACY

The School of Pharmacy offers work leading to the degree of Bachelor of Science in Pharmacy.

ENTRANCE REQUIREMENTS

An Associate in Arts degree based on the curriculum in Pharmacy in the Junior College, or the equivalent, is required.

THE SCHOOL OF EDUCATION

The School of Education prepares teachers, supervisors, and administrators for educational service and offers opportunities to teachers of experience to extend their education. The schedule of courses is arranged to meet the needs of employed students as well as those able to devote full time to their studies. It offers both graduate and undergraduate work.

THE DEGREES

The School of Education offers work leading to the following degrees: Bachelor of Arts in Education, Bachelor of Science in Home Economics, Bachelor of Science in Physical Education, Master of Arts in Education, and Doctor of Education.

Entrance Requirements

For the Bachelor's Degrees.—The satisfactory completion of two years of approved college work, or graduation from an approved two-year normal school, or the equivalent, is required.

For the Master's Degree.—A Bachelor's degree from an accredited college, or the equivalent, and the approval of the Committee on Admission and Advanced Standing are required.

For the Doctor's Degree.—A Master's degree from an accredited college, or the equivalent, and the approval of the Faculty of the School of Education are required.

THE SCHOOL OF GOVERNMENT

The Degrees

The School of Government offers work leading to the following degrees: (1) Bachelor of Arts in Government with a major in Foreign Affairs, Public Affairs, Accounting, Business Administration, or Business and Economic Statistics; (2) Master of Arts in Government with a major field in Foreign Affairs, Public Affairs, Economic Policy, Accounting, Business and Economic Statistics, Counseling, or Psychometrics; (3) Master of Arts in Public Administration; (4) Master of Arts in Personnel Administration; (5) Master of Business Administration; (6) Doctor of Business Administration.

Entrance Requirements

For the Bachelor's Degree

Bachelor of Arts in Government.—An Associate in Arts degree based on the *Foreign Affairs, Accounting, Business Administration,* or *Statistics* curriculum in the Junior College, or the equivalent, and a quality-point index of 2.00 for the first two years' work are required.

For the Master's Degrees

A Bachelor's degree from an accredited college or university is required. A student from an unaccredited institution may be admitted a the discretion of the Dean's Council, but will be required to take suc extra work above the minimum requirements as may be prescribed.

Students admitted to candidacy must have attained a quality-point index of 3.00 (a *B* average) in their undergraduate major. An applican whose scholastic average is below 3.00 in his major, or who lacks prerequisite courses, may be referred to the Division of Special Students t make up the deficiency.

Master of Arts in Government.—The applicant's undergraduate program must have included prerequisite courses, corresponding to an undergraduate major at this University, for the chosen field of graduate study.

Master of Arts in Public Administration.—An undergraduate major in a social science field appropriate to the chosen field of advanced work in public administration is required.

Master of Arts in Personnel Administration.—An undergraduate major in a social science or education, with the appropriate courses in psychology is required.

Master of Business Administration.—An acceptable undergraduate major in Business Administration or the equivalent is required. Applicants who are deficient in such course work may be admitted and will be required to make up deficiencies over and above the normal Master of Business Administration program.

For the Degree of Doctor of Business Administration

A Master's degree in Business Administration or a related field, or the equivalent, and proficiency in Statistics and Accounting to the satisfaction of the Committee on Doctoral Studies are required.

COLLEGE OF GENERAL STUDIES

The College of General Studies offers off-campus credit and noncredit courses in any field in which there is sufficient demand and for which instructional facilities can be made available. These courses will meet at the time and place most convenient for the students enrolled and may begin at any time of the year.

The College also provides degree-granting programs for mature persons whose background and experience is such that they should be matriculated in a college designed to meet individual needs.

The Division of Community Services consists of the George Washington University Reading Clinic and a program of popular noncredit courses, institutes, and lectures offered both on campus and off campus.

Entrance Requirements

Off-Campus Credit Courses.—A simplified procedure for admission and registration in off-campus courses is conducted at the first meeting of the class. Transcripts of previous academic work are not required. Registration is restricted to those whose qualifications would indicate that they are able to carry the course successfully. Admission to an off-campus course does not constitute admission to degree candidacy in the University.

Noncredit Courses.—In general, noncredit courses will be open to any individual interested in enrolling. When a noncredit course is organized at the request of some particular agency or group, admission may be restricted to the students recommended by the sponsoring organization. A limit on the size of classes may have to be imposed in order to maintain the quality of instruction.

THE DIVISION OF UNIVERSITY STUDENTS

The Division of University Students makes the work of the University, in its several colleges and schools, accessible to students 21 years of age or over who are not working toward a degree in this University.

Candidates for degrees in other colleges and universities attending the Summer Sessions of the University are registered in the Division of University Students.

Students under 21 years of age who meet the entrance requirements of the Junior College but who are not seeking degree candidacy at this University may be admitted to the Division of University Students to pursue programs of study approved by the Dean.

Adequate preparation to undertake the desired courses is required.

THE DIVISION OF SPECIAL STUDENTS

This is a non degree-granting division of the University in which the Director of Admissions may authorize the placement of students in the process of making up entrance deficiencies to degree-granting colleges and schools of the University.

COURSES OF INSTRUCTION

EXPLANATION OF COURSE NUMBERS

First-group courses.—Courses numbered from 1 to 100 are planned for the student in the freshman or sophomore year. With the approval of the adviser and the dean, they may also be taken by a junior or senior. In certain instances, they may be taken by a graduate student to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for the student in the junior or senior year. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the officer of instruction, and when the completion of additional work has been certified by the officer of instruction.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily for the graduate student. They are open, with the approval of the officer of instruction, to the qualified senior; they are not open to the Junior College student.

In the Law School, first-year courses are numbered from 100 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and graduate courses, from 401 to 500.

INDICATION OF THE AMOUNT OF CREDIT

The number of hours of credit given for the satisfactory completion of a course is in most cases indicated in parentheses after the name of the course.

For information concerning the hours at which courses will be offered, consult the Schedule of Classes for the Summer Sessions which will be available in May at the office of the Registrar.

The University reserves the right to change or withdraw any of the courses of instruction listed.

ACCOUNTING

1 *Introductory Accounting* (3) Kennedy

Basic principles underlying accounting records used by single proprietorships and partnerships, preparation of the work sheet and financial statements. Morning.

1–2 *Introductory Accounting* (3–3) Benson
Basic principles underlying accounting records used by single proprietorships, partnerships, and corporations; preparation of the work sheet and financial statements; introduction to cost accounting, analysis of financial statements, and valuation and income determination problems. Prerequisite to Accounting 2: Accounting 1 or permission of the instructor. Accounting 2 begins July 14. Evening.

101 *Cost Accounting* (3) Kurtz
Theory and purposes of industrial cost accounting; treatment of the systems of cost control and determination; the analysis and interpretation of cost data. Emphasis will be on job order cost accounting. Prerequisite: Accounting 1–2. Morning.

111 *Financial Statement Analysis* (3) Kennedy
Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; determination and interpretation of trends and ratios. Prerequisite: Accounting 1–2. Morning.

171 *Auditing* (3) Kurtz
Duties and responsibilities of auditors, principles and procedures of making audits, techniques of verifying each financial statement item, preparation of audit working papers and reports. Prerequisite: Accounting 121–22 or permission of the instructor. Evening.

191 *Advanced Accounting* (3) Kurtz
Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121–22. Evening.

193 *Business Budgeting* (3) ————
Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial and industrial organization. Prerequisite: Accounting 1–2. Evening.

231 *Contemporary Accounting Theory* (3) Kennedy
Advanced accounting principles and concepts and recent theories concerned with the valuation of assets and determination of income. Admission by permission of the instructor. Evening.

299–300 *Thesis* (3–3) The Staff

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following accounting courses for students enrolled in special programs.

3 *General Accounting* (3) Benson, Kurtz
For students in the Navy Graduate Comptrollership and Air Force Advanced Management programs only. Study of accounting systems

used by single proprietorships and corporations, with emphasis on accounting theory, terminology, and the analysis and interpretation of accounting data. Designed for those who need only a survey of accounting.

211–12 *Managerial Accounting* (3–3)
For students in Engineering Administration only. *First half:* analysis of the accounting system with special reference to the use of financial and operating records and accounting reports as tools of management; a study of valuation and income determination problems including the influence of price level changes on accounting data. Prerequisite: Accounting 1–2, or 3. *Second half:* a survey of internal accounting controls, commercial budgets, and cost accounting systems used by management in directing and controlling a business. Prerequisite to Accounting 212: Accounting 211 or permission of the instructor.

ART

11 *Art Appreciation* (3) Leite
A consideration of the vocabulary, methods, and materials of creative expression in the fine arts. A study of the language and function of art in its various media, the development of styles, aesthetic principles, theories, and ideals in art through the ages. Morning.

71 *Introduction to the Arts in America* (3) Kline
Painting, sculpture, architecture, furniture, and the popular arts from the Colonial to the Republican Period. Evening.

72 *Introduction to the Arts in America* (3) Kline
Painting, sculpture, architecture, furniture, and the popular arts during the 19th and 20th centuries. Afternoon.

105 *Renaissance Arts in Italy* (3) Leite
The development of painting, sculpture, and architecture in fifteenth and sixteenth century Italy. Morning.

BIOLOGY

1–2 *Survey in Biology* (3–3) Bowman, Munson
Systematic study of the plant and animal kingdoms, with emphasis upon the interdependence of living things and their relations with their environments. Introduction to organic evolution, heredity, public health, and conservation. Material fee, $7 for each half. Nine-week term. Biology 1 is not prerequisite to Biology 2. Biology 2 begins July 17 and ends August 15. Lectures, laboratories, and field trips. Afternoon.

212 *Research in Cytology* (arr.) Bowman
Individual problems for advanced students interested in this field. Hours and credits to be arranged.

299–300 *Thesis* (3–3) Bowman

BOTANY

1 *Structure and Functions of the Flowering Plant* (3) The Staff

The typical plant as a working mechanism, with emphasis on biological significance of plant physiology. Material fee, $7. Lecture and laboratory—morning.

2 *Survey of the Plant Kingdom* (3) The Staff

Study of the different kinds of plants, with emphasis on the evolution of the plant kingdom; practice in identifying flowering plants. May be taken concurrently with Botany 1. Material fee, $7. Lecture and laboratory—morning.

295 *Research* (arr.) The Staff

Time, credits, and fees to be arranged.

299–300 *Thesis* (3–3) The Staff

BUSINESS AND PUBLIC ADMINISTRATION

Business Administration

101 *Business Organization and Combination* (3) Clayton

Simple and interrelated forms of business enterprise and their control by government. Morning.

105 *Personnel Management in Industry* (3) Towson

Organization and work of the personnel department, human relations in business. Evening.

136 *Commercial Credit* (3) Prestwich

Types and sources of credit information, credit relationships from the standpoint of the commercial bank and the commercial business enterprise. Prerequisite: Accounting 1–2. Evening.

138 *Investments* (3) Shaffner

Analysis of factors of investment credit with application to different types of investments, proper selection of investments for various classes of investors, regulation. Prerequisite: Accounting 1–2. Evening.

141 *Principles of Marketing* (3) Prestwich

A survey of marketing, giving particular attention to consumption, retailing, wholesaling, and sales management; the entire marketing structure and its relation to the total economy. Prerequisite: Economics 1–2. Afternoon.

198 *Problems in Business Management* (3) Towson

Principles and methods of management illustrated by cases drawn from business and industry. Prerequisite: Business Administration 102. Open to seniors. Evening.

232 *Seminar in Business Finance* (3) Dockeray

Research in advanced financial problems. Evening.

278 *The Dynamics of Business* (3) Clayton
An analysis of the structure of American business, including a study of trend and cyclical change in economic activity and their bearing upon governmental policy. Evening.

292 *Seminar in Business Management* (3) Dockeray
Research on various phases of management, including business, industrial, and personnel management. Evening.

299–300 *Thesis* (3–3) Dockeray and Staff

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following business administration courses for students enrolled in special programs.

191 *Business Reports and Analyses* (3) Turner
For students in the Navy Graduate Comptrollership program only.

268 *Management Engineering* (3) Clewlow
For students in the Air Force Advanced Management program only. Analysis of the techniques for initiation and implementation of management engineering programs, with emphasis on organization and methods surveys, including the study of work measurement, work simplification, management audits, and other management improvement programs.

269 *Readings and Conferences in Comptrollership* (3) Johnson
For students in the Navy Graduate Comptrollership program only.

275 *Human Relations in Business* (3) Johnson
For students in the Navy Graduate Comptrollership program only.

PUBLIC ADMINISTRATION

211 *Problems of Governmental Organization* (3) Obern
Theories and principles of organization; analysis of problem areas in administration, such as decentralization, staff-line, field-headquarters, and executive-legislative relationships. Evening.

232 *Personnel Procedures and Problems* (3) Hubben
Study of such personnel functions as recruitment, selection, placement, promotion, supervision, evaluation, classification, and training. Practical problems of personnel administration. Evening.

297 *Seminar in Public Administration* (3) Obern
Advanced research on various phases of public administration including methods of policy formulation and control, the application of systems to management, administration problems of bureaucratic relationships. Evening.

299–300 *Thesis* (3–3) Obern and Staff
To be arranged.

COURSE OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above, the University offers the following public administration course for students enrolled in the Air Force Advanced Management Program.

251 *Governmental Budgeting* (3)
The role of budgeting in management; the principles and practices of budgetary formulation and administration.

CHEMISTRY

11–12 *General Chemistry** (4–4) Harkness, Schimelpfenig
Elementary course in general chemistry. Prerequisite: one year of high school algebra. Students with credit for one semester of general chemistry (college level) may enter Chemistry 12 on July 17. Laboratory fee, $18 for each half. Nine-week term ending August 15. Morning.

21 *Qualitative Inorganic Analysis* (4) Vincent
Theoretical and practical study of methods of separating and identifying the more common cations and anions using semi-micro techniques. Prerequisite: Chemistry 12. Laboratory fee, $18. Eight-week term. Afternoon.

22 *Quantitative Inorganic Analysis I* (4) Schmidt
Theory and practice of quantitative analysis by typical volumetric and gravimetric procedures. Prerequisite: Chemistry 21. Laboratory fee, $18. Eight-week term. Afternoon.

151–52 *Organic Chemistry** (4–4) Wrenn, ———
Chemistry of the compounds of carbon. Prerequisite†: Chemistry 21. Chemistry 151 laboratory fee, $11; Chemistry 152 laboratory fee, $18. Students who have credit for Chemistry 151 may enter Chemistry 152 on July 17. Nine-week term ending August 15. Morning.

295–96 *Research* (arr.) The Staff
Research on problems approved by the Staff. Open to qualified students with advanced training. Laboratory fee, $7.50 a semester hour. Hours and credits to be arranged.

299–300 *Thesis* (3–3) The Staff
Laboratory fee, $18 each half. Hours to be arranged.

ECONOMICS‡

1 *Principles of Economics*‡ (3) Burns, ———
Survey of the major economic principles, institutions, and problems in contemporary life. Morning and evening.

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* Full-year course; credit is not given until the second half of course is completed.

† This prerequisite may be waived in the case of the student who has earned a grade of *C* or better in Chemistry 12 within the past two years.

‡ Economics 1–2 is prerequisite to all other courses in Economics.

2 *Principles of Economics* (3) Watson, Burns
Continuation of Economics 1. Prerequisite: Economics 1. Morning and evening.

101 *Economic Analysis* (3) Watson
Analysis of demand, supply, and commodity pricing; theory of national income determination, pricing of productive services; welfare economics. Morning.

121 *Money and Banking* (3) ———
Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems. Afternoon.

181 *International Economics* (3) ———
Survey of world economics, theories of international trade, analysis of international economic problems, and the international organizations. Morning.

219 *Managerial Economics* (3) Watson
Analysis of price, production, and inventory policies of business firms. Evening.

251 *Theories of Economic Development* (3) Shenefield
Growth and change in economic activity, capital accumulation, innovations in technology and business organization. Evening.

253 *Productivity Analysis* (3) Kendrick
Concepts and measures of productivity; relations to economic growth and to structural changes in the American economy. Evening.

299–300 *Thesis* (3–3) The Staff

COURSE OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above, the University offers the following economics course for students enrolled in the Navy Graduate Comptrollership program.

195 *Industrial and Governmental Economics* (3) Watson
Survey of national income, the financial system, international economics, and public economic policy.

EDUCATION

PRE-SESSION

June 9 to June 27

109A *Learning and Teaching* (3) Detwiler
For the general student as well as the prospective teacher. Nature of learning based on the study of human growth and development and the observation of classroom situations. June 9–13; lecture—late afternoon; small group discussions and field work—evening. June 16–27: lecture and conference—morning; small group discussions and field work—afternoon.

116 *Elementary School Social Studies* (3) St. Cyr
For teachers. Content, methods, materials, and activities. Prerequisite: Education 109–10 and 121–22 or teaching experience. June 9–13: lecture—late afternoon; small group discussions and field work—evening. June 16–27: lecture and conference—morning; small group discussions and field work—afternoon.

219 *Elementary School Classroom Procedures** (3) LaBue
Current classroom practices with particular emphasis on ways of planning, unit teaching, techniques in discipline, individual and group evaluation techniques, resources for learning, providing for individual differences. June 9–13: lecture—late afternoon; small group discussions and field work—evening. June 16–27: lecture and conference—morning; small group discussions and field work—afternoon.

231 *Secondary School Classroom Procedures** (3) Bish
Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc.; review of recent literature. June 9–13: lecture—late afternoon; small group discussions and field work—evening. June 16–27: lecture and conference—morning; small group discussions and field work—afternoon.

TWELVE-WEEK EVENING SESSION

First Half—June 9 to July 18

109B *Learning and Teaching* (3) Detwiler
For the general student as well as the prospective teacher. Nature of learning based on the study of human growth and development and the observation of classroom situations. Evening.

Second Half—July 21 to August 29

110B *Learning and Teaching* (3) McCauley
For the general student as well as the prospective teacher. Nature of teaching approached through the understanding of learning and the observation of classroom situations. Evening.

SPECIAL SIX-WEEK SESSION

First Half—June 30 to July 18

110A *Learning and Teaching* (3) McCauley
For the general student as well as the prospective teacher. Nature of teaching approached through the understanding of learning and the observation of classroom situations. Lecture and conference—morning; small group discussions and field work—afternoon.

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* Prerequisite: adequate professional preparation.

115 *Teaching of Reading in the Elementary School* (3) Huse
A basic course in methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 109–10 and 121–22 or teaching experience. Lecture and conference—morning; small group discussions and field work—afternoon.

117 *Elementary School Science* (3) St. Cyr
Materials and methods. Prerequisite: Education 109–10 and 121–22 or teaching experience. Lecture and conference—morning; small group discussions, laboratory, and field work—afternoon.

207 *Curriculum Materials** (3) Bish
For experienced teachers. Construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to student's own situation. Lecture and conference—morning; small group discussions and field work—afternoon.

255 *Secondary Education** (3) Root
Current proposals for the improvement of secondary education. Lecture and conference—morning; small group discussions and field work—afternoon.

Second Half—July 21 to August 8

114 *Elementary School Music* (3) Reed
Materials and methods. Prerequisite: Psychology 1 and 29 or teaching experience. Lecture and conference—morning; small group conferences, laboratory, and field work—afternoon.

121 *Society and the School* (3) St. Cyr
Historical and sociological developments as related to local, national, and international roles of education; cooperation of the school with other community agencies. Lecture and conference—morning; small group discussions and field work—afternoon.

225 *Elementary School Reading* (3) Coleman
Developmental and remedial approaches to reading problems. Demonstrations of diagnostic and corrective techniques used in the Reading Clinic. Lecture and conference—morning; small group discussions and field work—afternoon.

243 *Human Relations in the Classroom** (3) Marinaccio
Principles and practices involved in interpersonal relationships between learner and teacher and among learners. Lecture and conference—morning; small group discussions and field work—afternoon.

256 *Secondary Education** (3) Root
Current problems in each of the subject-matter fields. Lecture and conference—morning; small group discussions and field work—afternoon.

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* Prerequisite: adequate professional preparation.

Full Period—June 30 to August 8

209 *Child Growth and Development** (3) LaBue
An interdisciplinary approach to child development taking into account such factors as society and culture, socialization, and socialization agents with particular emphasis on the home and school. Afternoon.

215 *Education of the Exceptional** (3) LaBu
For classroom teachers. A survey of current problems in the education and guidance of exceptional pupils. Nature and needs of thos physically, mentally, or emotionally handicapped; needs of the gifted Resources for help in correction, diagnosis, therapy, education, an guidance. Afternoon.

218 *Contemporary Problems in Education** (3) Jarma
Social foundations of education—a study of forces that shape th policies and offerings of the school. Morning.

229 *Administration of Elementary Education* (3) ———
For experienced teachers and administrators. Administration as means of achieving instructional objectives, organizing learning an teaching activities, handling supplies and equipment, maintaining th building, and integrating school and community life. Emphasis upo guide lines to action. Morning.

251 *Guidance in Secondary Schools** (3) Drees
Scope; needs; organization of the program; services to students, th instructional staff, and the administration; personnel needed for th program. Morning.

271 *The Teacher and School Administration** (3) Fo
A survey course for teachers and prospective administrators. Educa tion and world affairs, national agencies, role of the state, local admin istration, school finance, legal controls, school plant, public suppor democratic administrative procedures, improving teaching condition Morning.

275 *School Finance** (3) Hutchin
Educational financial theory, practice, and control, including metho of financing. Evening.

280 *Adult Education** (3) Kempfe
The adult as a learner, the teacher of adults, learning-teaching activ ties, administration of adult education programs. Evening.

281 *Group Procedures in Education** (3) Detwile
Theory, practice, evaluation, and application to all educational leve Evening.

285 *Extra-classroom Activities** (3) Sube
Nature and purposes of selected activities—homeroom, clubs, assem blies, school publications, student council, interscholastic contests; pa

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* Prerequisite: adequate professional preparation.

ticular attention to sponsorship, participation, finance, and evaluation. Evening.

295 *Educational Research Methods and Procedures* (3) Fox
Required of all Master of Arts candidates following Plan 2. Knowledge of elementary statistics required. Afternoon.

297 *Reading in Education* The Staff
To assist those preparing for the comprehensive examinations. No credit toward degree requirements. Tuition fee, $18. Afternoon.

POST-SESSION

August 11 to August 29

122 *Society and the School* (3) Angel
For the general student as well as the prospective teacher. Organization and operation of schools; principles and functions; role of the teacher. Lecture and conference—morning; small group discussions and field work—afternoon.

212 *Evaluation in Education*[*] (3) McCauley
Concept of evaluation, relationship between evaluation of ends and means, steps involved in the evaluation of learning outcomes. As the course progresses each student develops solutions for evaluation problems related to his work situation. Lecture and conference—morning; small group discussions and field work—afternoon.

ENGINEERING

CIVIL ENGINEERING

24 *Strength of Materials* (3) ______
Development and application of principles necessary to analyze stresses in and deformation of simple machine and structural components, combined stresses, strain energy, buckling of columns and beams, design of simple members and joints, composite members. Prerequisite: Civil Engineering 21 *Statics* or the equivalent; Mathematics 20, *Integral Calculus.* Evening.

ELECTRICAL ENGINEERING

12 *Electric Machinery* (3) ______
Principles of electromechanical energy conversion; methods of machine analysis, theory of transformers, d-c and a-c machines. Prerequisite: Electrical Engineering 11 *Electric Circuits* or the equivalent. Evening.

MECHANICAL ENGINEERING

6 *Engineering Problems*[†] (2) Morgan
Simple engineering problems in statics, dynamics, energy, heat, and electricity. Training in reasoning, engineering analysis, and applica-

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[*] Prerequisite: adequate professional preparation.

[†] This course should be completed before the beginning of the sophomore year.

tion of mathematics to engineering problems. Prerequisite: Mechanical Engineering 5 ***Orientation and Engineering Problems*** or the equivalent; removal of all entrance deficiencies in science or mathematics. Evening.

ENGINEERING ADMINISTRATION

201 *Engineering Administration I* (3)
The application of the scientific method to the administrative processes of planning and organizing; including subject material on th development of objectives, key factors in planning, basics of organization, stages of organizational growth, special problems of organization in an engineering or scientific enterprise, and management development. Evening.

ENGLISH

ENGLISH COMPOSITION*

A *English Practice* (3) Moore and Staf
Instruction, drill, and exercises in grammar, vocabulary, spelling, an mechanics in general; instruction and exercises in composition an reading. This course is designed to prepare students for English Morning and evening.

B *English for Foreign Students* (3) Alle
A course in reading and writing designed to prepare the student fo English 1. Special attention is given to spelling, syntax, gramma idiom, and vocabulary. Evening.

1 *English Composition** (3) Moore and Staf
Review of grammar, exercises in composition, readings. Morning an evening.

2 *English Composition** (3) Moore and Sta
Continuation of English 1. Morning and evening.

4 *English Composition** (3) Moore and Sta
A course in critical analysis and practice of expository and argumentative techniques and in research procedure. This is the secon half of the six-hour composition course required of students in th pre-Columbian College curricula. Prerequisite: English 1 and bot halves of an introductory literature course. Morning.

11 *The Writing of Reports* (3) Turner and Sta
Theory and practice in the writing of technical reports. Morning an evening.

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* Before students are registered in English 1, they are tested in the minimum essentials vocabulary, spelling, grammar, standard usage, and writing skill. Those students who sh marked superiority may, upon passing further tests, be exempted from one or both halves the English Composition course; those who are inadequately prepared for English 1 will assigned to English A.

All pre-Columbian College students (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, or Spani will follow the sequence of English 1, both halves of one of the introductory literature cour and English 4. English 2 is the second half of the six-hour composition course required students *not* following the pre-Columbian College curricula.

English 1 is prerequisite to all other courses in English.

ENGLISH LITERATURE*

51 *Introduction to English Literature* (3) Shepard and Staff
A historical survey. From beginnings to 1800. Morning and evening.

52 *Introduction to English Literature* (3) Shepard and Staff
A historical survey. Literature since 1800. Morning and evening.

135 *Shakespeare* (3) Tupper
The comedies and histories. Morning.

142 *The Neoclassical Movement* (3) Highfill
Poetry and prose from the mid-eighteenth century to the beginning of the Romantic Movement. Evening.

165 *The Twentieth Century* (3) Linton
Poetry and criticism since 1900. Morning.

184 *The English Drama* (3) Highfill
A historical survey from 1660 to the present day. Evening.

296 *Studies in the History of English Literary Criticism* (3) Shepard
Criticism from the eighteenth to the twentieth century. Open to undergraduates with approval of the instructor. Evening.

AMERICAN LITERATURE*

71 *Introduction to American Literature* (3) Cole and Staff
A historical survey. From beginnings to 1860. Morning and evening.

72 *Introduction to American Literature* (3) Cole and Staff
A historical survey. Literature since 1860. Morning and evening.

170 *The American Short Story* (3) Coberly
The historical development of the short story in America. Morning.

174 *Major American Poets* (3) Coberly
Advanced critical study of twentieth century poetry. Morning.

GEOGRAPHY

51 *Introduction to Geography* (3) Westermann
A study of place attributes and characteristics; patterns and associations of physical and cultural earth features. Morning.

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* All pre-Columbian College students (who are required to take one year of English composi-
on and one year of literature in English, Classical Languages, French, German, or Spanish)
ill follow the sequence of English 1, both halves of the introductory literature course, and
nglish 4.
English 51–52, 71–72, 91–92, Classical Languages and Literatures 71–72, French 51–52,
erman 51–52, or Spanish 51–52 is prerequisite to all second-group courses except English 125.

52 *World Regions* (3) Murph
The analysis of world regional divisions; description and interpret
tion of physical-cultural complexes; evaluation of regional differenc
as they affect the distribution and activities of man. Evening.

198 *Australia* (3) Westerman
Evening.

231 *Seminar: Conservation Problems* (3) Murph
Evening.

GERMAN

1–2 *First-year German* (3–3) Rogers, Ki
The essentials of German grammar, translation of easy prose. Fu
year course: credit is not given for German 1 until German 2 is co
pleted. Second half begins July 14. Morning and evening.

3–4 *Second-year German* (3–3) The Sta
Selections from modern German prose, review of grammar. Fu
year course: credit is not given for German 3 until German 4 is co
pleted. Prerequisite: German 1–2 or two years of high school G
man. Second half begins July 14. Morning and evening.

49 *German Readings for Nonmajor Students* (3) Legn
Designed primarily for graduate students preparing for reading
aminations. Undergraduates admitted with the permission of t
instructor. No academic credit for graduate students. June 16
July 14. Evening.

HISTORY*

39 *The Development of European Civilization* (3) Kays
Primarily for freshmen. The political, social, economic, and cultu
history of the Old World from ancient times to 1715. Morning.

40 *The Development of European Civilization* (3) Thomps
Primarily for freshmen. The political, social, economic, and cultu
history of the Old World from 1715 to the present. Evening.

71 *The Development of the Civilization of the United States* (3) Koen
Primarily for sophomores. The political, social, economic, and cultu
forces of the United States in their world setting from 1492 to 18
Morning.

72 *The Development of the Civilization of the United States* (3) Hask
Primarily for sophomores. The political, social, economic, and cultu
forces of the United States in their world setting from 1865 to
present. Evening.

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* History 39–40 is prerequisite to courses 109 through 152 and 190 through 196; Hist
71–72, to courses 171 through 184; either History 39–40 or 71–72, to courses 161 through 1

130 *Nationalism* (3) Kayser
The historical evolution of modern Nationalism. Morning.

164 *South America since Independence* (3) Davis
Development of the independent South American states in the 19th and 20th centuries. Evening.

172 *Social History of the United States* (3) Gray
Daily life, institutions, intellectual and artistic achievements of the Urban-Industrial Era, 1861 to the present time. Morning.

173 *Representative Americans* (3) Gray
A biographical approach to national history. Some fifty significant and pivotal personalities in the development of the United States in government, business, science, religion, journalism, the arts, and social reform. Morning.

175 *Political and Constitutional History of the United States* (3) Haskett
The programs and conflicts of group interests in America within the political and legal framework: to the eve of the Civil War. Evening.

181 *Diplomatic History of the United States to 1871* (3) Merriman
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of American secretaries of state and diplomatic agents. Morning.

182 *Diplomatic History of the United States since 1871* (3) Merriman
Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of American secretaries of state and diplomatic agents. Morning.

190 *History of India* (3) Thompson
The Civilization of India and her neighbors from the beginnings to independence. Morning.

–200 *Proseminar: the Literature and Method of History* (3–3) The Staff
Limited to majors in History. Hours to be arranged.

1–92 *Seminar* (3–3) The Staff
Prerequisite: approval of the Department. Hours to be arranged.

–300 *Thesis* (3–3) The Staff
Required of all candidates for the Master's degree specializing in history. Hours to be arranged.

LAW

First Session

June 9 to July 22

115 *Contracts I* (4) Mayo
Mutual assent, offer and acceptance, consideration, parol evidence rule, Statute of Frauds, third party beneficiaries, assignments, conditions. Evening.

135 *Legal Method and Legal System* (4) Merrifield
Introduction to substantive and procedural law dealing with basic concepts; training in method and technique of case law and legislation using modern case records; practice in use of law books and in legal writing; importance of language in law; legal reasoning and use of precedents under doctrines of stare decisis, law of the case, and res judicata; development of Anglo-American legal system; organization of judiciary and bar, stressing enforcement of ethical standards. Evening.

145 *Personal Property* (2) Fryer
Concepts of property, including interests created by bailments, liens, and pledges; methods of acquiring ownership. Morning.

215 *Civil Procedure* (4) Walburn
Pleadings, discovery, joinder, forms of trial and related proof problems. Emphasis is on Federal Rules of Civil Procedure and other modern codes. Morning and evening.

270 *Legislation* (2) Fryer
The legislative process, with particular emphasis on its operation in the federal and state governments; legislative organization and procedure; kinds of statutes; statutory interpretation. Morning.

279 *Taxation—Federal Income* (4) Hambrick
A study of the federal income tax, including construction of statutes, practice and procedure, and legislative policy. Evening.

285 *Trusts and Estates* (4) Young
Formalities of execution of wills; problems of construction, revocation, contest; limits on testamentary power; intestate succession. Creation of trusts, *inter vivos* and testamentary; administration of decedents estates and trust estates. Morning.

309 *Conflict of Laws* (4) Dixon
Study of cases involving foreign elements; principles of jurisdiction and limitations upon its exercise; procedure, torts, workmen's compensation, contracts, property, family law, administration of estates, business associations. Evening.

355 *Mortgages* (2) Orentliche
Security interests in real property, their creation, transfer, enforcement, and extinguishment. Evening.

380 *Suretyship* (2) Orentlicher
The law of suretyship, especially in the context of accommodation credit and commercial and financial practices, with attention also to informal and nonconsensual suretyship relations and the place of suretyship principles in the solution of legal problems generally. Evening.

SECOND SESSION

July 24 to September 6

116 *Contracts II* (2) ———
Scope of protection afforded contracts; specific performance of contracts other than land transactions. Evening.

125 *Criminal Law and Procedure* (4) Cooper
Origin and purposes of criminal law; elements of criminal liability; mental disorders; solicitation, attempt, and conspiracy; crimes against the person, against property, and against both; statutory offenses; criminal procedure, with consideration of Federal Rules of Criminal Procedure. Evening.

150 *Real Property* (2) Benson
Historical background of estates and conveyances, possessory estates, concurrent estates. Evening.

200 *Administrative Law* (4) Davison
The position of the administrative process in the separation of powers, including the status of administrative personnel, administrative hearings, judicial scrutiny of administrative action, discretion, and rule-making—particularly as relating to federal administrative agencies. Morning.

210 *Business Associations* (4) ———
Contrast of the partnership and corporation as alternative forms of organization; organizing partnerships and corporations—formalities, capital contributions, share structure; problems of operation; relations between partners; roles of shareholders, directors, officers; control devices; distributions to owners; voluntary reorganization; dissolution and termination. Evening.

219 *Commercial Paper* (4) Ledakis
Bills of exchange, promissory notes and checks, especially under the Negotiable Instruments Law. Evening.

230 *Conveyances* (2) Benson
Land contracts, conveyances, recording; easements, profits, covenants, and equitable servitudes; adverse possession and adverse user. Morning.

235 *Domestic Relations* (2) ———
Marriage, annulment, and divorce; adoption and custody of children; economic relations. Morning.

240 *Evidence* (4) Weston
Functions of court and jury; qualification and examination of witnesses; opinion, relevancy, and scientific evidence; proof of writings; application of the hearsay rule. Morning and evening.

251 *Insurance* (2)
The insurance device in life, property, and other risks. Evening.

265 *Legal Accounting* (2)
A study of elementary accounting principles and techniques; application of accounting principles to legal problems. Evening.

376 *Restitution* (2)
Remedies at law and in equity for restitution of benefits conferred, especially as based on the concept of unjust enrichment. Morning.

MATHEMATICS

3 *College Algebra* (3) The Staff
Prerequisite: one year each of high school algebra and high school geometry. Morning and evening.

6 *Plane Trigonometry* (3) The Staff
Prerequisite: two years of high school algebra, and one year of high school geometry, or Mathematics 3. Morning and evening.

12 *Analytic Geometry* (3) The Staff
Prerequisite: Mathematics 6, or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry. Morning and evening.

19 *Differential Calculus* (3) The Staff
Prerequisite: Mathematics 12. Morning and evening.

20 *Integral Calculus* (3) The Staff
Prerequisite: Mathematics 19. Morning and evening.

103 *Calculus and Differential Equations* (3) The Staff
Prerequisite: Mathematics 20. Morning and evening.

112 *Mathematics for Engineers and Scientists* (3) Johnston
Topics from advanced calculus, partial differential equations, vector analysis, and complex variables. Prerequisite: Mathematics 132 or 103. Evening.

171 *Vector Analysis* (3) The Staff
Evening.

PHARMACY

192 *Hospital Pharmacy: Prescription Practice* (1) Cooper
Prescription practice in the University Hospital Pharmacy. Prerequisite: Pharmacy 102. Laboratory—time to be arranged.

194 *Manufacturing Pharmacy* (3) Cooper
The manufacture of bulk pharmaceuticals in the University Hospital Pharmacy. Elective for seniors. Lecture and laboratory—time to be arranged.

PHILOSOPHY

51 *Introduction to Philosophy* (3) Schlagel
A critical examination of some of the problems of modern philosophy in relation to scientific and social developments since the Renaissance. Morning.

172 *American Philosophy* (3) Schlagel
A study of the thought of the great classic American Philosophers: Peirce, James, Royce, Santayana, Dewey, and Whitehead. Evening.

PHYSICS

5 *General Physics* (3) Koehl, Harrison
An introduction to the phenomena of light, heat, force, energy, and the properties of matter. This course may be taken as a terminal course by nonscience students who wish an introduction to the physical sciences. Prerequisite: high school algebra and plane geometry. Material fee, $11. Lecture and laboratory—morning and afternoon.

7 *General Physics* (3) Harrison, Lacerte
Elementary electricity and magnetism. Prerequisite: Physics 5; high school algebra and plane geometry. Material fee, $11. Lecture, recitation, and laboratory—afternoon and evening.

8 *General Physics* (3) Lacerte
This course is the fourth in the sequence of courses 5, 6, 7, and 8, and emphasizes the connection between the fundamental principles studied in courses 5, 6, and 7, and the phenomena and theories of modern physics. Topics considered include electromagnetic waves (light, radio, and X-rays), atomic and molecular structure, radioactivity, nuclear physics, the quantum theory of matter and radiation, and the elementary particles such as electrons, protons, neutrons, and mesons. Prerequisite: Physics 6 and 7. Lecture and recitation—evening.

118 *Introduction to Solid State Physics* (3) Rabin
Dielectric and magnetic properties of solids, electron theory of metals, semiconductors, dislocations, and plastic flow. Prerequisite: Physics 113; Mathematics 20. Evening.

POLITICAL SCIENCE*

9 *Government of the United States** (3) Brewer, West
The structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court; elections, political parties, and pressure groups. Morning and evening.

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* Six hours of first-group Political Science courses are prerequisite to all second-group courses.

10 *Government of the United States** (3) LeBlanc
Analysis of the structure, powers, and operation of state and local government: civil rights, major functions of government at federal, state, and local levels. Evening.

105 *The Governmental Process of the District of Columbia* (3) LeBlanc
Legal structure and political problems of the District of Columbia including restrictions on home rule, congressional regulations, and group politics. Evening.

107 *Problems in Modern Political Thought* (3) Kraus
Development of democratic political institutions and analysis of the main challenges to constitutional democracy in the 19th and 20th centuries. Evening.

111 *Introduction to Comparative Government* (3) Kraus
Government and politics of the principal constitutional democracies of Western Europe, with special attention to Great Britain and France. Morning.

121 *The Constitution of the United States* (3) West
The judicial power of the federal courts in constitutional interpretation. Special attention to state-federal relationships, taxation, and legislative-executive-judicial relationships. Morning.

145 *Political Parties and Politics* (3) LeBlanc
Organization and operations of political parties in the United States: major and minor parties, bosses and corruption, nominations and elections, influence on President and Congress. Not open to students who have credit for former Political Science 116. Morning.

171 *International Politics* (3) Ludden
Basic forces underlying the conduct of international relations and the formation of foreign policy: power politics, imperialism, collective security, and international cooperation. Morning.

172 *International Organization: The United Nations* (3) Ludden
Development and current operation of international organization within the system of sovereign states with emphasis on the United Nations. Evening.

181 *International Law* (3) Brewer
Survey of the public law of nations with particular emphasis on the law of peace. Morning.

213 *Readings in Comparative Government* (3) Kraus
Readings and group discussions on comparative political and administrative institutions with attention to legislatures, executive departments, political parties, etc. Evening.

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* Six hours of first-group Political Science courses are prerequisite to all second-group courses.

277 *Seminar: Latin American Government* (3) Davis
Analysis of the political structures of selected Latin American republics. Two comparable governments studied each year. Evening.

279 *Reading Course in International Affairs* (3) Ludden
Reading and discussion of basic materials designed to stimulate investigation of problems in the nature and development of international law, politics, and organization. Evening.

281 *Seminar: International Law and Relations* (3) Brewer
Research topics in the public law of nations, with special attention to problems of pacific settlement, sanctions, war, neutrality, and state jurisdiction, and to their political implications. Evening.

299–300 *Thesis* (3–3) The Staff
Time to be arranged.

PSYCHOLOGY*

1 *General Psychology** (3) Johnson, Snide
The fundamental principles underlying human behavior. Morning and evening.

4 *Psychology of Adjustment* (3) Caldwell
Processes involved in the total adjustment of the individual, with emphasis on social environment; development in the individual of adjustment techniques. Evening.

22 *Introduction to Educational Psychology* (3) Snide
Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training. Morning.

29 *Child Psychology* (3) Johnson
A genetic approach to the study of the child. Morning.

98 *Abnormal Psychology* (3) Hunt
The causes, diagnosis, treatment, and prevention of the various types of maladjustment and mental disorders. Prerequisite: 6 credits in psychology, or 3 credits in psychology and 6 credits in a biological science. Morning.

129 *Introduction to Counseling and Guidance* (3) Sylvester
A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling. Evening.

131 *Psychological Tests* (3) Hunt
A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, $7. Evening.

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* Psychology 1 is prerequisite to all other courses in Psychology.

144 *Personnel Psychology* (3) Mos

The applications of psychology to personnel work in education, bus ness, industry, and government. Evening.

151 *Social Psychology* (3) Tuthi

The social foundations of attitudes and behavior. Individual adjus ment to group situations, such as the family, school, fraternity, an occupation. The psychological basis of race prejudice, nationalis and war. Evening.

156 *Psychology of Propaganda and Public Opinion* (3) Tuthi

The psychology of opinion formation, measurement of opinion, soc determinants of attitudes, psychological processes in propaganda, bas of receptivity to propaganda, psychological warfare. Evening.

193 *Readings in Psychology* (3) The Sta

Supervised readings on specific topics in psychology, with conferenc for undergraduate majors. Open only to seniors with 18 or mo credits in psychology with a quality-point index of 3.00 or high Permission of staff member under whom course is to be taken is n essary. Hours to be arranged.

205 *Field Work in Psychology* (3) The Sta

Supervised field work in agencies providing psychological service. A mission by permission of the Executive Officer of the Departme Hours to be arranged.

207 *Readings in Psychology for Graduate Students* (3) The Sta

Supervised readings with conferences on specified topics in psycholo Permission of staff member under whom course is to be taken necessary. Hours to be arranged.

225 *Seminar: Mental Hygiene* (3) Caldw

A study of mental health problems with special attention to p grams of prevention. Evening.

244 *Seminar: Job Analysis and Evaluation* (3) Mos

Techniques for the development of work performed descriptio qualifications analysis, and job demands specifications. The eval tions and classification of jobs for the purpose of establishing wa structures. Evening.

295 *Research in Psychology* (arr.) The Sta

Hours and credits to be arranged.

299 *Thesis* (3) The Sta

Hours to be arranged.

COURSES OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above, the Univers offers the following psychology courses for students enrolled in Engine ing Administration only.

145 *Principles of Human Relations* (3)
Survey of the psychological principles involved in dealing with individuals and groups. Evening.

146 *Problems in Human Relations* (3)
The application of psychological principles to understanding and improving personal and group relations. Emphasis will be upon case studies and specific problems drawn from life situations, with important attention to supervisory and administrative relationships. Prerequisite: Psychology 1 (or Psychology 145 for students in the special programs). Evening.

RELIGION

60 *History of Religion* (3) Olmstead
Judaism, Christianity, and Islam; analysis of their origin, evolution, and contemporary status. Morning.

121 *Problems of Western Religious Thought* (3) Olmstead
The nature of religious truth and experience; the existence, character, and activity of God; the predicament of modern man; the problem of evil and suffering; eternal life; science and religion; the meaning of worship; religious views of history. Evening.

ROMANCE LANGUAGES AND LITERATURES

French

1–2 *First-year French* (3–3) The Staff
For beginners. Grammar, composition, drill in pronunciation, translation of modern French prose. Full-year course: credit will not be given for French 1 until French 2 is completed. Workshop fee, $6 for each half.* Second half begins July 14. Morning and evening.

3–4 *Second-year French* (3–3) The Staff
Advanced grammar and composition, reading in modern French prose, oral practice, introduction to French civilization. Full-year course: credit will not be given for French 3 until French 4 is completed. Prerequisite: French 1–2 or two years of high school French. Second half begins July 14. Morning and evening.

9–10 *French Conversation and Composition* (3–3) The Staff
Second half begins July 14. Morning.

Spanish

1–2 *First-year Spanish* (3–3) The Staff
For beginners. Grammar, composition, drill in pronunciation, reading of modern Spanish prose. Full-year course: credit will not be given for Spanish 1 until Spanish 2 is completed. Workshop fee, $6 for each half.* Second half begins July 14. Morning and evening.

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* The workshop hour for each half of these courses is in addition to the regularly scheduled citation periods each week.

3–4 *Second-year Spanish* (3–3) The Sta

Advanced grammar and composition, reading of modern Spanish pro oral practice, introduction to Hispanic civilization. Full-year cours credit will not be given for Spanish 3 until Spanish 4 is complete Prerequisite: Spanish 1–2 or two years of high school Spanish. Secon half begins July 14. Morning and evening.

9–10 *Spanish Conversation and Composition* (3–3) The Sta

Second half begins July 14. Morning.

SECRETARIAL STUDIES

1 *Elementary Typewriting* (3) Sho

Fundamental techniques of typewriting, basic styles of business lette introduction to tabulation, and preparation of general office form Laboratory fee, $7. Evening.

2 *Intermediate Typewriting* (3) Sho

The business letter and its arrangement, advanced tabulation, ma uscript typing, office forms, stencil cutting, and legal documen Prerequisite: Secretarial Studies 1 or the equivalent; ability to ty accurately at 30 words a minute. Laboratory fee, $7. Evening.

11 *Elementary Shorthand and Transcription* (3) Sh

A study of the principles of Gregg shorthand correlated with dic tion and transcription. *Minimum* dictation speed of 60 words minute attained. Laboratory fee, $3. Evening.

SLAVIC LANGUAGES AND LITERATURES

1–2 *First-year Russian* (3–3) Yakobs

Beginner's course in fundamentals of grammar and pronunciati with graded reading, oral drill, and written practice. Second h begins July 14. Evening.

SOCIOLOGY*

1 *Man in Modern Society** (3) Lavell, Stephe

Origins and development of culture, the impact of groups and ins tutions on man's social behavior, social processes, social change, a social control. Morning and evening.

122 *Culture and Personality* (3) Stephe

Influences of group membership and cultural conditions on personali socio-cultural factors in mental health; and the relationship of person ity to caste, class, and occupation. Morning.

132 *Courtship and Marriage* (3) Lav

Dating and courtship as social processes, reasons for marriage, m riage laws, mate selection, factors in marriage adjustment, predict and counseling. Evening.

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* Sociology 1 is prerequisite to all other courses in Sociology.

295–96 *Research* (arr.) The Staff

99–300 *Thesis* (3–3) The Staff

SPEECH

A *Speech Clinic* Pettit, Bielski

Individual or group lessons, without academic credit, for such speech difficulties as lisping, cleft palate, articulatory problems, and stuttering. Fee: for individual lesson, $7; for group lesson, $4. Time to be arranged.

B *American Speech for Foreign Students* (3) Bielski

Class limited to foreign-born students. Instruction in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. The International Phonetic Alphabet is used. Recording fee, $5.50. Evening.

1 *Effective Speaking* (3) The Staff

Preparation and delivery of extempore speeches; developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, $4. Morning and evening.

11 *Training the Speaking Voice* (3) Leggette, Pettit

Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of the sounds of English and the standards of speech. Class instruction in the problems of rate, volume, pitch, and quality. Recording fee, $4. Morning and evening.

32 *Oral Reading* (3) Leggette

Reading to others, theory and practice in the problems of interpreting the printed page. Prerequisite: Speech 11 or the permission of the instructor. Recording fee, $4. Morning.

121 *Group Discussion and Conference Leadership* (3) Henigan

The process of thinking and problem solving in committees and small groups, and the methods of leading discussions and conferences. Prerequisite: 6 hours of speech or the permission of the instructor. Morning.

77–78 *Clinical Practice in Speech Therapy* (1–1) Pettit, Bielski

Case work in remedial speech. This course may be repeated for a total of 6 semester hours of credit. Prerequisite: Speech 175. Time to be arranged.

3–84 *Clinical Practice in Hearing Therapy* (1–1) Pettit

Case work with persons handicapped with hearing losses. This course may be repeated for a total of 3 semester hours of credit. Prerequisite: Speech 182. Time to be arranged.

STATISTICS

51 *Introduction to Business and Economic Statistics* (3) Johnson

Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data; consideration of characteristic

values, measures of variability, sampling processes, index numb
time series analysis, and simple correlation. Prerequisite: one entrar
unit in algebra. Laboratory fee, $9. Lecture and laboratory. E
ning.

52 *Mathematics of Finance* (3) Johns
Interest and discount, annuities, valuation of stocks and bonds, si
ing funds, amortization, valuation of depletable assets, depreciati
building and loan associations. Prerequisite: one entrance unit
algebra. Evening.

53 *Introduction to Statistics in Psychology and Education* (3) McC
Sources of data, tabulation, charts and graphs, averages, dispersi
quartiles and percentiles, raw scores and derived scores, profiles, nor
and their use, frequency distributions, intelligence and other quotie
reliability and validity of tests, normal curve, correlation, element
sampling, statistical error, limitations of statistics. Prerequisite:
entrance unit in algebra. Laboratory fee, $9. Lecture and laborato
Afternoon.

91–92 *Principles of Statistical Methods* (3–3) Thon
The meaning, uses, and applications of: variates and attributes, me
urement and enumeration, averages and dispersion, frequency distri
tions and their characteristics, errors of measurement and their c
trol, purposive and random sampling in theory and practice and th
errors and estimates, correlation theory and applications, power fu
tions; Type I and II errors; introduction to analysis of variance;
the making of statistical decisions. Prerequisite: one entrance unit
algebra. Laboratory fee, $9 for each half. First half from June
to July 11, second half from July 14 to August 8. Students m
register for both halves of this course unless permitted to do oth
wise, in an extenuating circumstance, by the Executive Officer of
Department of Statistics. Credit will not be given for Statistics
until Statistics 92 is completed. Lecture and laboratory. Evening

117 *Analysis of Variance I* (3) McC
The analysis of variance to segregate factors producing signific
variation; a method to estimate experimental error, multiple classifi
tions, Latin Square, Greco-Latin Square, factorials; an introduction
model theory. Applications are stressed. Prerequisite: Statis
91–92.

118 *Correlation and the Chi-square Test I* (3) ———
A study of simple, partial, and multiple correlation. Rank corr
tion, the method of contingency, and analysis of covariance. T
of independence, likeness, and goodness of fit. Applications
stressed. Prerequisite: Statistics 91–92.

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above the Univer
offers the following courses in statistics for students enrolled in
special programs.

119 *The Bases of Statistical Decision Making* (2) McCall
For students in the Navy Graduate Comptrollership Program only. Introduction to the techniques of decision making, with emphasis on applications rather than theory. Includes: binomial distribution, normal distribution, Type I and II errors, estimation, research methodology, and problems of inference.

120 *Principles of Statistical Analysis* (3) Johnson
For students in the Air Force Advanced Management Program only. Introduction to the basic concepts of statistical analysis, measures of central tendency, dispersion, normal distribution, basic statistical inference including estimation and testing hypotheses. Examples utilizing actual case studies in so far as possible.

ZOOLOGY

1–2 *Introduction to Zoology* (4–4) Mortensen, Desmond
An introduction to the study of the structure, functions, and relation of animals, and of the fundamental biological principles involved. Material fee, $11 for each half. Nine-week term. Zoology 2 begins July 17 and ends August 15. Lecture and laboratory. Evening.

145 *Introduction to Vertebrate Embryology* (3) Hansen
Origin and early development of the individual, formation of organ systems. Emphasis on the frog, chick, and pig, with reference to the human embryo. Prerequisite: Zoology 2 or the equivalent. Material fee, $11. Evening.

295 *Research* (3) The Staff
Investigation of special problems. Hours to be arranged.

299 *Thesis* (3) The Staff

THE CATALOGUE ISSUE

1958-59

THE GEORGE WASHINGTON UNIVERSITY BULLETIN

VOL. LVII No. 8

THE CATALOGUE ISSUE

WASHINGTON 6, D. C.

PUBLISHED IN JULY
MCMLVIII

BY THE UNIVERSITY

CONTENTS

Page
THE UNIVERSITY CALENDAR vii
OFFICERS AND COMMITTEES OF THE UNIVERSITY xiii
  The Board of Trustees xv
  Standing Committees of the Board of Trustees xvii
FFICERS OF ADMINISTRATION xix
  The Academic Council xxi
  Standing Committees of the Faculty xxiii
  Emeritus Faculty xxvi
  Faculty and Staff of Instruction xxix
  Research Projects lxxix
  Administrative Assistants lxxxix
HE UNIVERSITY 1
  History and Organization 3
  Educational Facilities 9
  Admission 13
  Registration 24
  Fees and Financial Regulations 25
  Fellowships, Scholarships, Prizes, Financial Aid 29
  Regulations 48
IE COLLEGES, SCHOOLS, AND DIVISIONS 57
  The Junior College 59
  Columbian College (the senior college) 76
  The Graduate Council 93
  The School of Medicine 103
  The Law School 117
  The School of Engineering 131
  The School of Pharmacy 149
  The School of Education 158
  The School of Government 181
  The College of General Studies 202
  The Division of University Students 205
  The Division of Special Students 206
  The Division of Air Science 208
  The Summer Sessions 211
MINISTRATIVE UNITS 213
  Health Administration 215
  Veterans Education 217
  Community and University Services 219
RSES OF INSTRUCTION 221
  Accounting 225
  Air Science 230
  Anatomy 233
  Anesthesiology 235
  Art 236

- Bacteriology, Hygiene, and Preventive Medicine
- Biochemistry
- Biology
- Botany
- Business and Public Administration
- Chemistry
- Civil Engineering
- Classical Languages and Literatures
- Dermatology and Syphilology
- Economics
- Education
- Electrical Engineering
- English
- Geography
- Geology
- Germanic Languages and Literatures
- History
- Home Economics
- Journalism
- Law
- Mathematics
- Mechanical Engineering
- Medicine
- Neurology and Neurological Surgery
- Obstetrics and Gynecology
- Ophthalmology
- Otolaryngology
- Pathology
- Pediatrics
- Pharmacology
- Pharmacy
- Philosophy
- Physical Education for Men
- Physical Education for Women
- Physical Medicine and Rehabilitation
- Physics
- Physiology
- Political Science
- Psychiatry
- Psychology
- Radiology
- Religion
- Romance Languages and Literatures
- Secretarial Studies
- Slavic Languages and Literatures
- Sociology
- Speech
- Statistics
- Surgery
- Urology
- Zoology

STUDENT LIFE

INDEX

THE UNIVERSITY CALENDAR

1958

July

S	M	T	W	T	F	S
..	..	1	2	3	4	5
6	7	8	9	10	11	12
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September

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December

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March

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June

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July

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August

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September

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October

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November

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December

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THE UNIVERSITY CALENDAR *

1958–59

Date	Day	Occasion
1958 Fall Semester:		
Sept. 2–12	Tuesday through Friday	Preadvising for all entering Junior College and School of Engineering students
Sept. 11	Thursday	Orientation Assembly for all new students
Sept. 12 and 15	Friday and Monday	Curriculum assemblies†
Sept. 16	Tuesday	Freshman tests Examinations for students who wish to qualify for advanced courses or waive curriculum requirements
Sept. 17	Wednesday	Meeting of the University Faculty
Sept. 18 and 19	Thursday and Friday	Registration*
Sept. 22	Monday	Classes begin*
Oct. 3	Friday	Last day on which candidates may file thesis subjects for the Master's degrees to be conferred in February
Oct. 9	Thursday	Stated meeting of the Board of Trustees
Oct. 18	Saturday	Fall Convocation
Nov. 11	Tuesday	Veterans Day. Holiday
Nov. 25	Tuesday	Meeting of the Academic Council
Nov. 27–29	Thursday through Saturday	Thanksgiving recess
Dec. 11	Thursday	Stated meeting of the Board of Trustees
Dec. 13	Saturday	Graduate Record Examination
Dec. 22–Jan. 3	Monday through Saturday	Christmas recess
59		
Jan. 5	Monday	Classes resume Last day for receiving theses of candidates for the Master's degrees to be conferred in February Last day for receiving dissertations of candidates for the degrees of Doctor of Philosophy, Doctor of Education, and Doctor of Business Administration to be conferred in February

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In the School of Medicine, registration is conducted September 11, classes begin September 15.
All new students are expected to attend one Curriculum Assembly.

THE UNIVERSITY CALENDAR—Continued

Date	Day	Occasion
Jan. 5	Monday	Last day for receiving disse tions of candidates for the gree of Doctor of Juridical ence to be conferred in Jun
Jan. 14	Wednesday	Last day of classes for the semester
Jan. 19–27	Monday through Tuesday	Examination period
SPRING SEMESTER:		
Jan. 28	Wednesday	Examinations for students wish to qualify for advan courses or waive curriculum quirements
Jan. 29 and 30.	Thursday and Friday	Registration
Feb. 2	Monday	Classes resume for the sp semester
Feb. 12	Thursday	Stated meeting of the Board Trustees
Feb. 13	Friday	Last day on which candidates file thesis subjects for the M ter's degrees to be conferred June
Feb. 23	Monday	Winter Convocation. Holiday
March 2	Monday	Applications for fellowships 1959–60 should be filed
March 12	Thursday	Stated meeting of the Board Trustees
March 24	Tuesday	Meeting of the University Fac
March 27–April 1	Friday through Wednesday	Easter recess
April 1	Wednesday	Applications for scholarships 1959–60 should be filed
April 10	Friday	Last day for receiving disse tions of candidates for the grees of Doctor of Philoso Doctor of Education, and D tor of Business Administra to be conferred in June
April 11	Saturday	Graduate Record Examinatio
April 28	Tuesday	Meeting of the Academic Cou
May 1	Friday	Last day for receiving theses candidates for the Master's grees to be conferred in Ju
May 13	Wednesday	Last day of classes for the sp semester
May 14	Thursday	Annual meeting of the Board Trustees
May 18–26	Monday through Tuesday	Examination period

THE UNIVERSITY CALENDAR—Continued

Date	Day	Occasion
May 31	Sunday	Baccalaureate Sermon
June 3	Wednesday	Commencement
SUMMER SESSIONS:*		
June 15	Monday	Registration for eight-week term
June 16	Tuesday	Classes begin
Aug. 7	Friday	Eight-week term ends Last day for receiving theses for the Master's degrees to be conferred in October
Sept. 4	Friday	Last day for receiving dissertations of candidates for the degrees of Doctor of Philosophy, Doctor of Education, and Doctor of Business Administration to be conferred in October
Sept. 17 and 18.	Thursday and Friday..	Registration for the fall semester of the academic year 1959–60

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* For all schools and colleges offering courses in the Summer Sessions except the Law School nd the School of Education.
The dates of the calendar of the Law School will be announced.
The calendar for the special sessions of the School of Education is as follows: Presession, une 8–26; Six-week Session, June 29–August 7; Postsession, August 10–28. Registration r each of these sessions is on the first day of classes.

OFFICERS AND COMMITTEES OF THE UNIVERSITY

THE BOARD OF TRUSTEES

The Board of Trustees of the University is composed of the President of the University ex officio and the following persons by election:

1958

John St. Clair Brookes, Jr., A.M., LL.B.; Colorado Building
*Watson Davis, B.S. in C.E., C.E.; 1719 N Street
Robert Vedder Fleming, LL.D.; Riggs National Bank
Charles Carroll Glover, Jr., A.M., LL.B., LL.D.; Riggs National Bank
Edward Karrick Morris, LL.D.; 1701 Florida Avenue
Godfrey Leon Munter, A.B., LL.B., LL.D.; Municipal Court for the District of Columbia
Samuel Spencer, LL.B.; 2000 Massachusetts Avenue
James Edwin Webb, A.B., LL.D.; 218 N. Robinson Street, Oklahoma City, Oklahoma
Alexander Wetmore, Ph.D., Sc.D.; Smithsonian Institution
*Charles Stanley White, M.D., Sc.D.; 1801 I Street

1959

Clarence Aiken Aspinwall, LL.D.; 1140 Fifteenth Street
*Daniel LeRay Borden, A.M., M.D.; 1835 I Street
Lyman James Briggs, Ph.D., Sc.D., D.Eng., LL.D.; 3208 Newark Street
Wiley Buchanan, Jr.; United States Department of State
Eugene Cassin Carusi, A.M., J.D.; Union Trust Building
Mrs. Joshua Evans, Jr., A.B., Ed.D.; 3405 Lowell Street
Ulysses S. Grant, 3d, B.S., Graduate United States Engineers School, LL.D., Sc.D.; 1135 Twenty-first Street
ohn Edgar Hoover, LL.M., LL.D.; United States Department of Justice
rank Atherton Howard, B.S. in M.E., LL.B.; 30 Rockefeller Plaza, New York City
Miss Helen Newman, LL.M.; Library, United States Supreme Court
dney William Souers, A.B., LL.D.; General American Life Insurance Company, St. Louis, Missouri
Walter Rupert Tuckerman, A.B., LL.B., LL.D.; 5215 Edgemoor Lane, Bethesda, Maryland

1960

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THE ELECTRONICS RESEARCH PROJECT

The Electronics Research Project does work in the general field of Nucleonics, the improvement of the operations of photomultiplier tubes, and the development of fast operating coincidence measurements, flip-flop circuits, and pulse generators. This project operates under contracts with the Department of the Navy.

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ARMY LOGISTICS RESEARCH PROJECT

The Army Logistics Research Project is engaged in a program of research leading to the development of logistics theory and its application to a Modern Army Supply System. The activity involves systems design, the analysis of performance of designed systems and sub-systems under field conditions, and the development of procedures to meet logistical operational criteria for the Army of the future.

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Sonia Fay Seaton, *Secretary to the Registrar*
Dorothy May Chan, *Transcript Clerk*
Mildred Van Horn Lee, *Statistical Clerk*
Beatrice Dickens, A.B., *Statistical Clerk*
Doris Ann Johnson, A.B., *Transcript Clerk*
Kay Morgan Heryford, *Transcript Clerk*
Audrey Martin Zorolow, *Record Clerk*
June Elizabeth Hetzel, *Record Clerk*
Gale Vivian Shaver, *Record Clerk*
Miriam Gonzales Zabawa, *Record Clerk*
Bertha McCaslin Bernheisel, B.S., *Graduation Clerk*
Eleanor Johnson, *Clerk*
Helen Batts Williams, *Receptionist*

THE LIBRARY

James Burton Walton, A.B., M.S. in L.S., *Associate Librarian*
Anna Virginia Appich, A.B., *Assistant Librarian, Acquisitions*
Mary Elizabeth Thompson, B.S., B.S. in L.S., *Assistant Librarian, Cataloguing*
Isabella Frances Young, A.B. in L.S., *Assistant Librarian, Medical Library*
Bertha Margarethe Rothe, A.M., B.S. in L.S., LL.B., LL.M., *Assistant Librarian, Law Library*
Joanne Monk, A.M., *Assistant Librarian, Reference*
Alice Pollock Bray, B.S., B.S. in L.S., *Assistant, Cataloguing*
Richard Dier, A.B., B.S. in L.S., *Assistant, Circulation*
Margaret Laramy Meaker, A.M., B.S. in L.S., *Assistant, Circulation*
Mercy Stoner McCurdy, *Assistant, Acquisitions*
James Lawrence Murray, M.S., *Assistant, Circulation*
Edith Sewall Phillips, A.B., *Assistant, Cataloguing*
Alice Sheftel, B.S., *Assistant, Acquisitions*
DeElma Clare Smith, A.B., *Assistant, Reserve Book Reading Room*
Vera Warburton, *Assistant, Medical Library*
Joan Spofford Hulfish, *Assistant, Cataloguing*
Gael Annette Jones, *Assistant, Hospital Library*

John William O'Mara, *Assistant, Clerical*
Joyce VandenBos, *Assistant, Circulation*

OFFICE OF UNIVERSITY DEVELOPMENT

OFFICE OF THE ASSISTANT TO THE PRESIDENT

Marvin Topping, Ph.D., *Assistant Director of the University Development Division*
Edward Andrew Potts, A.B., LL.B., *Assistant in the Office of University Development Division*
Allen Commander, A.M., *Assistant*
Doris Lee Weinberg, *Secretary*
Rachel Tims Parker, A.B., *Secretary to the Assistant Director of the University Development Division*

EDUCATIONAL COUNSELING OFFICE

Timothy Edward Smith, A.M., *Educational Counselor*
Helen Seegar Stone, Ph.D., *Educational Counselor*
Beverly Jo Van Trump, *Secretary*

PUBLIC RELATIONS OFFICE

Mary Margaret Davis, A.M., *Associate Director of Public Relations*
Lillian Brooks Brown, *Director of Radio and Television*
John Samuel Toomey, A.B., *Assistant to the Director of Public Relations*
Donald Bruce Callander, *Staff Writer*
Jane Tunstall Lingo, A.B., *Staff Writer*
James Douglas Ward, *Public Relations Assistant in Charge of Sports Publicity*
Lawrence Frank Mihlon, *Assistant*
Judith Waldstreicher Wilker, *Secretary*

ALUMNI RELATIONS OFFICE

Thomas Albert Brown III, A.B., *Director of the Office of Alumni Relations*
Sue Ann Stockton, A.B., *Assistant to the Director*
Rowena McCrae Heflin, *Secretary*
Gwynne Broaddus, *Records Clerk*

OFFICE OF THE DEAN FOR SPONSORED RESEARCH

Susan Finnell Hart, *Assistant to the Dean*
James Henry Rempe, A.B., *Assistant to the Dean*
Louise Wilson Watts, *Secretary*

OFFICE OF THE PATENT, TRADE-MARK, AND COPYRIGHT FOUNDATION

Louis James Harris, A.B., LL.B., S.J.D., LL.M., *Executive Director*
Ruth Edna McCluney, *Secretary*
Jean Hewett Thomas, A.B., *Secretary*
Dorothy Koch Pierce, B.S., *Editorial Assistant*
Freddie Boyle, A.B., *Editorial Assistant*
Barbara Scott Oxaal, A.B., *Secretarial Assistant*

STUDENT ACTIVITIES

Virginia Mae Sherard, A.M., *Assistant to the Director of Activities for Women*
Lise-Lotte Becker, *Secretary, Office of the Director of Activities for Women*
Edward Ferero, A.B., *Housing Assistant in the Office of the Director of Activities for Men*
Kathleen Mary Denver, *Student Activities Assistant*

Intercollegiate Athletics

William Jennings Reinhart, B.B.A., *Head Baseball and Head Basketball Coach*
Eugene Hughey Sherman, Sr., B.S., *Head Football Coach*
Raymond George Hanken, B.S. in P.E., A.M. in Ed., *Assistant Football Coach*
James Joseph Feula, B.S., *Assistant Football Coach*
Andrew Kalen, A.B., *Assistant Football Coach*
William Neal, A.M., *Assistant Football Coach*
Harry Ledford, *Athletic Trainer*
Frances Montague, *Secretary in the Office of Men's Athletics*

Musical Activities

Robert Howe Harmon, A.B., M.D., *Director of the Glee Clubs*
Grace Ruble Harmon, *Associate Director of the Glee Clubs*

VETERANS EDUCATION

Janet Wildman Johnson, A.M., *Assistant Director of Veterans Education*
Margaret Lamb, A.B., *Assistant to the Director of Veterans Education*
Carole Theresa Hesse, *Receptionist and Chief Clerk*

RESIDENCE AND SORORITY HALLS

Frances Wright Caroé, *Resident Director, Hattie M. Strong Hall for Women*

Virginia Mae Sherard, A.M., *Residence Director, Sorority Hall, 2129 G Street*

Harry Carl Gordon, B.S., *Resident Manager, John Quincy Adams Hall for Men*

Robert Stauffer, *Assistant Resident Manager, John Quincy Adams Hall for Men*

Henry Agusiewicz, *Housing Manager, Welling Hall*

THE UNIVERSITY

HISTORY AND ORGANIZATION

HISTORY

The idea of a university located in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government."

It was George Washington's hope that the "General Government" would extend toward such an institution "a fostering hand". No steps were taken by Congress to carry out the provisions of Washington's will, and the stock that he had bequeathed for the establishment of a university in the District of Columbia became valueless owing to the failure of the Potomac Canal properties.

Meanwhile, however, a movement was started by private persons under the leadership of Luther Rice to establish an institution of higher learning at the seat of the National Government for the education of the Baptist ministry and to afford general collegiate training. In 1819 an association was formed by Luther Rice, Obadiah B. Brown, Spencer H. Cone, and Enoch Reynolds for the purpose of raising funds to buy land for the use of the college.

A group of the Nation's leaders who were especially interested in Washington's idea became patrons of the college and contributed to funds raised for the purchase of land and erection of buildings. Among them were James Monroe, President of the United States; William H. Crawford, Secretary of the Treasury; John C. Calhoun, Secretary of War; William Wirt, Attorney General; Return J. Meigs, Postmaster General; and thirty-two members of Congress.

Legally to implement the college a petition was made to Congress for the incorporation of "the General Convention of the Baptist Denomination in the District of Columbia for evangelical and literary purposes". This petition was denied by Congress, on April 26, 1820, because of its sectarian character.

Failing to obtain a denominational charter, members of the association enlarged their objective to embrace national aims, and with the sponsorship of Government leaders there was presented in Congress a bill for the incorporation of "the Columbian Society for literary purposes", it being proposed to realize in this way "the aspirations of Washington, Jefferson and Madison for the erection of a university at the seat of the federal government."

Acting upon this second petition, on February 9, 1821, Congress chartered Columbian College in the District of Columbia, inserting in the charter by special action the provision "that persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College or denied any of the privileges, immunities or advantages thereof, for or on account of his sentiments in matters of religion".

Thus Columbian College in the District of Columbia was chartered by Congress as one of the early nonsectarian institutions of higher learning in the United States, under the distinguished favor of President James Monroe and members of his Cabinet.

A tract of approximately forty-seven acres, extending about one-half mile northwest of Boundary Street (Florida Avenue) between Fourteenth and Fifteenth Streets, was purchased and by 1822 the main building was completed sufficiently to use.

Two years later, when the first Commencement was held on December 15, 1824, Congress and the Supreme Court adjourned their sessions to enable their members to attend the exercises. President Monroe, John Quincy Adams, John C. Calhoun, Henry Clay, and the Marquis de Lafayette headed the eminent company in attendance.

By an act of Congress of March 3, 1873, the name of the college was changed to "Columbian University", in recognition of the enlarged scope of the institution. In 1884 the University was moved from its first location on "College Hill", now Columbia Heights, to the new University Hall built for it at Fifteenth and H Streets. Near-by buildings accommodated the School of Medicine and somewhat later, the Law School.

For a period of six years, from 1898 to 1904, the University was placed under control of the Baptist Denomination. In 1904 an act restoring the original secular character of the University and authorizing change of name to The George Washington University was passed by Congress.

Subsequently all colleges, schools, and divisions of the University except the School of Medicine were brought together in the area bounded by Nineteenth, Twenty-third, and G Streets, and Pennsylvania Avenue NW. The School of Medicine is situated on H Street between Thirteenth and Fourteenth Streets NW.

The endowment of the University is $7,000,000.

In 1930 a new plan of academic organization for the liberal arts work was effected in the establishment of the Junior College and the redefining of graduate work.

PURPOSE AND OBJECTIVES

The main purpose of The George Washington University may be briefly stated: to establish and maintain the high tradition of the university ideal in the political center of the Nation. In the words of the Bill of Incorporation, introduced and subsequently enacted by Congress, in 1821, it was proposed to realize "the aspirations of Washington, Jefferson, and Madison for the erection of a university at the seat of the Federal Government." The idea of a university so situated was, in the minds of the early sponsors and patrons, to afford a relation between the traditional objectives of higher education, and, as Washington stated: "knowledge in the principles of Politics and good Government." This central idea of a university functioning in the Capital of the Nation, nonsectarian, free of sectional limitations, conscious of its wide American relationships, and open to the ever-increasing international influences which bear upon it, has been continuous through nearly a century and a half of difficult growth and adaptation.

The main, simple purpose of this University has been therefore, to develop the university ideal in the place of greatest national significance, flexible before the changing needs of its growing national constituency and loyal to the traditional principles of learning and research, in providing through disciplined reason, wisdom for the individual and his society. This statement intends to differentiate University objectives from the incorporation of the more specific objectives of the colleges and schools which comprise the University. Theirs is the problem of relating the university ideal to the particular application of scholarship and professional learning in their several fields.

THE COLLEGES, SCHOOLS, AND DIVISIONS

The George Washington University includes fourteen colleges, schools, and divisions, as follows:

The Junior College offers the work of the first two years of the four-year college program in the liberal arts and sciences and two years of preprofessional work. Each of these curricula leads to the degree of Associate in Arts. It also offers two-year terminal curricula. Those in Accounting and Secretarial Studies lead to the degree of Associate in Arts; those in Home Economics, Medical Technology—Basic Course, and Physical Science lead to the degree of Associate in Science.

Columbian College offers the work of the junior and senior years of the four-year college program in the liberal arts and sciences leading to the degrees of Bachelor of Arts and Bachelor of Science. It also offers the studies leading to the degrees of Master of Arts and Master of Science in the fields of liberal arts and sciences.

The Graduate Council offers a program of advanced study and research leading to the degree of Doctor of Philosophy.

The School of Medicine offers work leading to the degree of Doctor of Medicine.

The Law School offers professional and graduate courses leading to the degrees of Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

The School of Engineering offers courses leading to the degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering, Master of Science in Engineering, and Master of Enginering Administration.

The School of Pharmacy offers courses leading to the degrees of Bachelor of Science in Pharmacy and Master of Science in Pharmacy.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education, Bachelor of Science in Home Economics, and Bachelor of Science in Physical Education, and graduate studies leading to the degrees of Master of Arts in Education and Doctor of Education.

The School of Government offers undergraduate programs of study in Foreign Affairs, Public Affairs, Accounting, Business Administration, and Statistics, leading to the degree of Bachelor of Arts in Government. Graduate work is offered leading to the following degrees: Master of Arts in Government in the fields of Foreign Affairs, Public Affairs, Economic Policy, Accounting, Business and Economic Statistics, Counseling, and Psychometrics; Master of Arts in Public Administration; Master of Arts in Personnel Administration; Master of Business Administration; and Doctor of Business Administration.

The College of General Studies supplements the adult education program of the University through its Off-Campus Division, Campus Division, and Division of Community Services.

The Division of University Students make available courses for mature students, not candidates for degrees in this University.

The Division of Special Students makes available courses for students in the process of qualifying for degree candidacy.

The Division of Air Science offers a program of Air Force ROTC training which is integrated with the curricula of the Colleges and schools of the University and leads to appointment as a commissioned officer in the United States Air Force Reserve.

The Summer Sessions.

INSTRUCTIONAL DIVISIONS

The instructional divisions, established at The George Washington University in 1930, are organized on the basis of the relationship of course content, interrelation of methods and prerequisites, and similarity of background and viewpoint. Originally there were four divisions, Languages and Literatures, Mathematics and Physical Sciences, Natural Sciences, and Social Sciences. The plan is being restudied and a provisional alignment has been made which adds two new divisions, Applied Sciences and Medical Sciences.

ADMINISTRATIVE AND RESEARCH ACTIVITIES

Administrative Units

The University maintains the following Administrative Units: Health Administration, Veterans Education, the Reading Clinic, the Speech Clinic, and the Testing and Counseling Center.

Research Projects

Research projects sponsored by agencies of the Federal Government and by private foundations and industries are conducted. Cooperation between these projects and the various departments of instruction is as close as the nature and needs of the projects and departments will permit.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association. The School of Medicine is a member of the Association of American Medical Colleges and is one of the medical colleges which have been continuously approved by the American Medical Association. The School of Pharmacy is accredited by the American Council on Pharmaceutical Education as a class "A" school. It is a member of the American Association of Colleges of Pharmacy. The School of Engineering is on the accredited list of the Engineers' Council for Professional Development. The School of Education is a charter member of the American Association of Colleges for Teacher Education and is accredited by the National Council for Accreditation of Teacher Education.

LOCATION

The George Washington University is in downtown Washington four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible to the University are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor, as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

GOVERNMENT

The government and general educational management of The George Washington University are vested in a self-perpetuating Board of Trustees, with the President of the University as a member ex officio. The members of the Board are named for a period of three years and are divided into three classes. The members of one class are elected at each annual meeting to fill the places of the members whose terms of office expire. Two members of each class are nominated by the Alumni Association.

EDUCATIONAL FACILITIES

BUILDINGS

Buildings, grounds, and equipment are valued at approximately $23,000,000.

The buildings of the Junior College, Columbian College, the Graduate Council, the Law School, the School of Engineering, the School of Pharmacy, the School of Education, the School of Government, the College of General Studies, the Division of University Students, the Division of Special Students, the Division of Air Science, the University Hospital and Outpatient Department, and the Cancer Clinic are located between Nineteenth and Twenty-fourth Streets and between Pennsylvania Avenue and G Street NW. The School of Medicine is at Fourteenth and H Streets NW. The buildings of the University are as follows:

John Quincy Adams Hall, 1900 H Street. Residence hall for men.

Bacon Hall, 2000 H Street. Named in honor of the late Joel Smith Bacon, President of the University from 1843 to 1854. Offices of the Dean of the Graduate Council, the Dean for Sponsored Research, the Alumni Office, the Educational Counselor; Administrative and Faculty offices; lounges; seminar rooms. Reception rooms for returning alumni.

Binney Hall, 2018 I Street. Named in honor of the late Joseph Getchell Binney, President of the University from 1855 to 1858. Offices of the Army Logistics Research Project.

Chapin Hall, 2128 H Street (rear). Named in honor of the late Stephen Chapin, President of the University from 1828 to 1841. Offices and classrooms of the Air Force ROTC.

Corcoran Hall, 725 Twenty-first Street. Named in honor of the late William W. Corcoran, benefactor of the University and a former member of the Board of Trustees. Offices of the Treasurer, the departments of Chemistry and Physics; Chemistry Research Project; the chemistry and physics laboratories; classrooms.

Davis-Hodgkins House, 731 Twenty-second Street. Offices and lounges of engineering students' organizations.

Everglades Apartments, 2223 H Street, a residence hall for nurses.

Faculty Club House, 714 Twenty-first Street.

Gymnasium, 2010-12 H Street.

Hall of Government, 710 Twenty-first Street. The gift of the late Mrs. Henry Alvah Strong, former Trustee of the University. Offices of the Dean of the School of Government, the departments of Accounting, Business and Public Administration, Economics, History, Political Science, and Statistics; Offices of the Air Force Advanced Management Course and Navy Graduate Comptrollership Program; classrooms.

Harlan-Brewer House, 1923 H Street. Offices of law student organizations, lounges, reading rooms.

Hospital House Staff Residence, 818 Twenty-second Street.

Hospital and Outpatient Department, Washington Circle.

International House, 2110 G Street. Office of the Adviser to Students from Foreign Countries; club rooms.

Lisner Auditorium, 730 Twenty-first Street. The gift of the late Abram Lisner, former Trustee of the University. The Auditorium; Lisner Lounge; offices and classrooms of the Department of Speech, the Speech Clinic, and the housing officer.

Dolly Madison Hall, 736 Twenty-second Street. Residence hall for women.

James Monroe Hall, 2115 G Street. Offices of the Dean of the Junior College, the Dean of Columbian College, the Dean of the Division of University Students, the Dean of the School of Education; the departments of Education, English (English and American Literature), Germanic Languages, Journalism, Mathematics, Psychology, Secretarial Studies, and Slavic Languages; classrooms.

Office of the President, 2003 G Street. Offices of the President, Dean of Faculties, and Administrative Secretary.

Placement Office, 2114 G Street.

Samson Hall, 2036 H Street. Named in honor of the late George Whitefield Samson, President of the University from 1859 to 1871. Disbursing Office; offices of the departments of Chemistry, Geology, and Physics.

School of Medicine, 1335-1339 H Street. Offices of the Dean and Staff of the School of Medicine; the Medical Library; laboratories; lecture rooms; research laboratories; student and faculty lounges; and University Medical Bookstore.

Sorority Halls:

2129 G Street. Apartments of Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Zeta Tau Alpha, and Kappa Kappa Gamma sororities.

2131 G Street. Apartment of Delta Gamma Sorority.

802 Twenty-first Street. Apartment of Phi Sigma Sigma sorority.

2112 G Street. Apartments of Kappa Alpha Theta and Kappa Delta sororities.

Staughton Hall, 707 Twenty-second Street. Named in honor of the late William Staughton, President of the University from 1821 to 1827. Offices and laboratories of the Navy Logistics Research Project.

Stockton Hall, 720 Twentieth Street. Named in honor of the late Rear Admiral Charles Herbert Stockton, President of the University from 1910 to 1918. Offices, library, and lecture halls of the Law School.

Hattie M. Strong Hall, 620 Twenty-first Street. Residence hall for women. Named in honor of the donor, the late Mrs. Henry Alvah Strong, former Trustee of the University.

Student Union, 2125 G Street. Offices of student organizations, student cafeteria and snack bar, reading room, lounge, game and music room, and the "Lost and Found" Office.

Tompkins Hall of Engineering, 725 Twenty-third Street. The gift of the late Charles H. Tompkins, former Trustee of the University. Offices of the Dean of the School of Engineering; the departments of Civil, Electrical, Mechanical Engineering, and Engineering Administration; Engineering testing laboratories, general laboratories, drafting rooms, and classrooms.

University Book Store, 2120 H Street. University Medical Bookstore, 1335 H Street.

University Library, 2023 G Street. The gift of the late Abram Lisner, former Trustee of the University. The library, rooms of the Board of Trustees, classrooms.

The Helen L. and Mary E. Warwick Memorial Building, 2300 K Street. Diagnostic and treatment rooms, and research laboratories of the George Washington University Cancer Clinic.

Welling Hall, 814 Twenty-second Street. Residence hall for men. Named in honor of the late James Clarke Welling, President of the University from 1871 to 1894.

Woodhull House, 2033 G Street. Gift of the late General Maxwell Van Zandt Woodhull, former Trustee of the University. Office of the Director of Activities for Women; meeting rooms for student activities.

Building A, 2026 G Street. Offices of the Department of Romance Languages.

Building B, 2024 G Street. Offices, laboratories, and classrooms of the Department of Home Economics.
Building C, 2029 G Street. Offices of the Registrar and the Director of Admissions; offices and laboratories of the departments of Biology, Botany, and Zoology; classrooms.
Building D, 2013 G Street. Office of the Business Manager; Human Resources Research Office.
Building F, 706 Twentieth Street. Offices of the Dean of the College of General Studies.
Building G, 712 Twentieth Street. Offices of the Department of English (Composition section); Academic Editor.
Building H, 714–16 Twentieth Street. Offices and locker rooms of the Department of Physical Education for Women.
Building I, 2135 G Street. Offices, classrooms, and laboratories of the Department of Geography.
Buildings J and L, 2131 and 2129 G Street (rear). Classrooms and locker rooms of the Department of Physical Education for Women.
Buildings M and N, 716-18 Twenty-first Street. Offices of the Department of Philosophy; offices and laboratories of the Testing and Counseling Center.
Building O, 2106 G Street. Office of the Department of Religion.
Building P, 2108 G Street. Offices of the Student Health Service and the Dean of the Division of Special Students.
Building Q, 2029 H Street. Office of the Director of Veterans Education, Plant Engineer, and the Director of Activities for Men.
Building R, 2027 H Street. Offices of the Graduate Manager of Athletics, the Department of Physical Education for Men, and the Athletic Staff.
Building S, 2025 H Street. Offices of the Assistant to the President and Public Relations.
Building T, 2110 G Street. Offices of the Dean of the Summer Sessions; International House (see International House).
Building V, 2114 H Street. Research laboratories of the Department of Physics.
Building W, 2128 H Street. Offices of the School of Pharmacy; pharmacy laboratories; classrooms.
Building X, 2107 H Street. Offices of the departments of Art and Sociology; Patent, Trade-Mark, and Copyright Foundation; Director of the Institute of Correctional Administration; Faculty offices.
Building Y, 802 Twenty-first Street. Offices, classrooms, and laboratories of the Reading Clinic.

LIBRARY FACILITIES

The Library collections of The George Washington University are housed in the University Library in Lisner Hall, the general library of the University; and in the departmental libraries of law, in Stockton Hall, and medicine, in the School of Medicine.

These collections contain approximately 322,000 volumes—251,600 in the University Library, 52,700 in the Law Library, and 17,700 in the Medical Library. Approximately 10,000 volumes a year are added to the library's resources. Endowments, supplementing the University appropriation, provide books in the fields of American civilization, American literature, foreign service, history, and public finance, and gifts from many sources have enriched the collections. The Libraries currently receive 1,900 periodicals.

In the modern University Library building, erected in 1939, on the first three floors are the delivery hall, card catalogue, reference and main reading rooms, periodical room, and reserve book rooms; on the fourth floor are ten planned seminar rooms. To the original 135,000 volume eight-tier stack of modern steel construction has been added a similar unit of 170,000 volume capacity with 50 study carrels.

Of the special subject collections in the University Libraries, the most recent acquisition is the internationally known library of the Carnegie Endowment for International Peace, which was assembled during forty years of its activity in Washington, and was purchased by the University. The collection contains 50,000 bound volumes and 20,000 pamphlets in the fields of international law and relations, history, and economics. Other collections in the Library are the W. Lloyd Wright collection of Washingtoniana, acquired in 1950; the Richard Heinzel Collection of Germanic philology and literature; the Curt Wachsmuth Collection of Greek and Roman literature, archaeology, and history; the Mount Vernon Collection on political history, international law, and the social sciences; a representative collection of Spanish American books, the gift of the governments of Hispanic America; and the Chauncey Mitchell Depew Public Speaking Collection.

Information concerning the use of the Libraries may be obtained at the Library service desks. A classified list on cards of selected recent acquisitions is available at frequent intervals, in addition to the complete information in the card catalogue. Monthly art exhibitions are held on the first and second floors of the University Library during the academic year.

The hours of the University Library and the Law Library are Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.; Sunday, 2:00 to 6:00 P.M. The Medical Library is open Monday through Friday, 9:00 A.M. to 10:00 P.M.; Saturday, 9:00 A.M. to 5:00 P.M.

The Library is administered for the curricular, reference, and recreational needs and interests of the students. Instruction in the use of the library is given in the required English courses, and by the reference librarians. The Library endeavors to assist students and all members of the University to use the rich library resources of Washington and the unusual opportunities they offer for extensive research. Interlibrary loan arrangements are maintained with other libraries in the city and in the United States.

The student has access to the Library of Congress, the Public Library of the District of Columbia and its branches, the library of the Pan American Union, the Library of the Bureau of Railway Economics, the Library of the United States Department of Agriculture, the Library of the United States Office of Education, the National Library of Medicine, the Library of the Smithsonian Institution, and many of the other great special collections of the government departments.

ADMISSION

All colleges, schools, and divisions of the University accept men and women.

Students may enter any college, school, or division of the University, except the School of Medicine, at the beginning of either semester or any of the Summer Sessions.

Entrance to the School of Medicine in 1958–59 is permitted only at the opening of the semester beginning September 1958.

GENERAL ADMISSION REQUIREMENTS

The following factors are considered in determining the eligibility of an applicant for admission:

1. The adequacy of previous academic work as preparation for the course of study now contemplated—including quantity and quality of work and the standing of the institution in which it was done.
2. Results of specified tests, when prescribed by the Committee on Admissions.
3. The aptitude of the student for the course contemplated.
4. The character of the student.

The University reserves the right to refuse admission to any student who has a previous academic record of such grade as to create doubt of his ability to pursue college work successfully or who, for any other reason, would not be an acceptable student.

APPLICATION FOR ADMISSION

An applicant for admission must obtain from the Office of the Director of Admissions an application blank which he must fill out completely and return with the application fee of $10 if applying as a degree candidate, $5 if applying as a non-degree candidate. A recent photograph, with signature, of the applicant must be attached to the blank.

Applications should be filed by July 1 for the fall semester, January 1 for the spring semester, and May 1 for the Summer Sessions.

An applicant from a secondary school must send the high school record form provided by the University to his high school principal with the request that the principal fill out the form and mail it *directly* to the Office of the Director of Admissions.

An applicant who has previously attended an institution of higher learning must request the registrar of that institution to mail directly to the Office of the Director of Admissions a transcript of his record. If he has attended more than one such institution he must request the registrar of each institution to send to the Office of the Director of Admissions a transcript of his record, *even though credits were not earned,* together with an honorable dismissal from the institution last attended.

The Graduate Record Examination administered by the Educational Testing Service, Princeton, New Jersey, is accepted as supplemental evidence of the applicant's educational attainment, and the appropriate report should accompany the application for admission whenever available.

METHODS OF ADMISSION

FROM SECONDARY SCHOOLS

An applicant from a secondary school may seek to qualify for admission by certificate or examination.

By Certificate

A certificate of graduation with a minimum of fifteen "units"[*] from an accredited secondary school and the recommendation from the principal of the secondary school that the applicant is prepared to undertake college work will be considered subject to the following conditions:

1. If the school is accredited by the regional accrediting association, the student must rank not lower than the fourth fifth of his class.

2. If the school is not listed by the regional accrediting association, but has been accredited by the state accrediting agency, the student must rank in the upper three fifths of his class.

By College Entrance Board Examinations

An applicant may qualify by passing satisfactorily College Entrance Board examinations as prescribed by the Director of Admissions. These examinations are given at a large number of examination centers throughout the United States, including Washington, D. C., on March 15, May 17, August 13, and December 6, 1958; and January 10, February 14, March 14, May 16, and August 12, 1959.

Arrangements for the examinations should be made with the College Entrance Examination Board, Post Office Box 592, Princeton, N. J., not less than one month before the date of the examinations.

FROM HIGHER INSTITUTIONS[†]

An applicant for advanced standing may be considered for admission upon the presentation of satisfactory credentials from an accredited institution of higher learning. The student must be in good standing as to scholarship and conduct, and must be eligible to return to the previously attended institution in the semester for which he seeks admission to this University.

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[*] A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of prepared classroom work.

[†] The University reserves the right to refuse advance credit in whole or in part, or to allow it provisionally. Credit so given may be withdrawn for subsequent poor work.

If the transcript of record from such an institution includes the record of his secondary school work, it is not necessary for the applicant to have forwarded a separate record directly from the principal of the secondary school. High school work is considered only as fulfilling entrance requirements; it is never credited toward advanced standing.

Properly certified courses taken at accredited colleges or universities may be applied toward a degree at this University, subject to the curriculum requirements and regulations of the school or college to which admission is sought. Work of low pass grade (such as *D* or the equivalent) will not be considered for transfer.

METHODS OF READMISSION

A student who has previously registered in the University, but who has not been in attendance during the semester prior to registration (summer session excluded) should file an application for readmission in advance of registration. If the student is seeking readmission as a degree candidate and was previously registered as a nondegree student, or if he has attended one or more higher institutions during his absence from the University, he must file in the Office of the Director of Admissions complete and official transcripts of record from each institution attended before his application may be considered. All applications for readmission are considered on the basis of regulations effective for the specific semester in which the applicant seeks to enter.

TRANSFER WITHIN THE UNIVERSITY

For information concerning transfer from one college, school, or division to another within the University, see pages 50–51.

ENTRANCE REQUIREMENTS*

THE JUNIOR COLLEGE

An acceptable certificate of graduation from an accredited secondary school, or the satisfactory passing of College Entrance Board examinations selected with the approval of the Director of Admissions, is required. (See "Methods of Admission".)

Distribution of Units for All Curricula.—Certification by the principal that the student has satisfied all curriculum requirements of the school will be accepted in lieu of any prescribed distribution of units. Atten-

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[*] Entrance requirements are established by the faculties of the several colleges, schools, and divisions. The Director of Admissions, as agent for the faculties, administers regulations governing admission, readmission, and transfer.

tion is called, however, to the necessity of completing stated prerequisite studies during the secondary school period for admission to certain curricula. It is to be noted that one unit of algebra is prerequisite to courses in chemistry, mathematics, physics, and statistics, and that in addition one unit of plane geometry is prerequisite to courses in mathematics and physics. In the instance of applicants who do not meet the above stated mathematics requirements, algebra and plane geometry may be taken without college credit when offered by the Department of Mathematics. For a statement of the foreign language requirements see page 67.

A desirable secondary school program in preparation for college would include: four years of English, at least two years of one foreign language, two years of natural or physical science with laboratory instruction (over and beyond the so-called "General Sciences"), two or three years of social studies (with concentration on history), one or two years of basic mathematics.

COLUMBIAN COLLEGE (THE SENIOR COLLEGE)

For the Bachelor's Degrees

Two years of Junior College work leading to the degree of Associate in Arts, or the lower-division work in institutions not organized on the junior-senior-college plan, following a specified curriculum, meet the minimum requirements of Columbian College. In addition, however, scholarship requirements for admission may be set somewhat higher than those for graduation from the Junior College.

Bachelor of Arts.—An Associate in Arts degree based on the *Arts and Letters* curriculum in the Junior College, or the equivalent (see page 68), is required.

Bachelor of Science.—An Associate in Arts degree based on the *Science* curriculum in the Junior College, or the equivalent (see pages 68–69), is required.

For the Master's Degrees

An approved Bachelor's degree from an accredited higher institution is required. A student from an unaccredited institution may be admitted at the discretion of the Committee on Admission and Advanced Standing, but he will be required to take such extra work above the minimum requirements as may be prescribed. An appropriate distribution of courses and a superior quality of work in the major field are essential.

Applications for admission must be approved by the department or division and by the Dean.

Master of Arts.—The student's undergraduate curriculum must have included a program of study substantially equivalent to the Bachelor of Arts major in his chosen field at this University.

Master of Science.—The student's undergraduate curriculum must have included the equivalent of the undergraduate major at this University of the scientific department under which he desires to work.

THE GRADUATE COUNCIL

Doctor of Philosophy.—The student must possess an adequate academic preparation for advanced study in the proposed field, as evidenced by approved Bachelor's and Master's degrees, or the equivalent, together with acceptable personal qualities and capacity for creative work.

THE SCHOOL OF MEDICINE

Doctor of Medicine.—A minimum of ninety semester hours of credit, applicable toward a degree in this University or in another approved college of liberal arts, is required for admission to the School of Medicine. A semester hour represents one class hour or a minimum of two laboratory hours a week for a period of approximately sixteen weeks. A credit earned at an institution operating on the quarter system is the equivalent of two-thirds of a semester hour. Specific required courses are:

1. Chemistry as follows: (a) eight semester hours in general inorganic chemistry, of which at least four hours are laboratory work (qualitative analysis may be counted as general inorganic chemistry); (b) six or eight semester hours, the equivalent of a one-year college course of organic chemistry, including laboratory work.
2. Physics, eight semester hours, of which at least two hours are laboratory work.
3. Biology, eight semester hours, of which at least four hours are laboratory work. This requirement may be satisfied by a course of eight semester hours in either general biology or zoology.
4. English composition and literature, six semester hours; the usual introductory college course or the equivalent.

Academic ability is evaluated on the basis of general quality-point index, scientific index, scope of studies, specific interests, yearly progress, and the results of the required Medical College Admission Test. Well qualified candidates are eligible for admission after completing the minimal ninety semester-hour requirement. However, a high percentage of students are better qualified for the study of medicine after four years of college work.

Advanced Standing

A student who has satisfactorily completed one or two years at any other medical school approved by the American Medical Association, and who has the necessary preliminary educational requirements, may be admitted to advanced standing.

The Law School

For the Degrees of Bachelor of Laws and Juris Doctor

Bachelor of Laws.—A Bachelor of Arts or equivalent degree awarded upon completion of a four-year course in an approved college or university is required. The baccalaureate record must be of satisfactory quality and must include an acceptable distribution of courses. An applicant will not be admitted who has been in attendance at another law school and who is ineligible to return to that school in good standing. From the applicants, a selection will be made by the Committee on Admissions.

Juris Doctor.—A student does not register as a candidate for the degree until his last year in the Law School. For details, see page 126.

ADVANCED STANDING

Advanced standing toward the degree of Bachelor of Laws will be granted only for work successfully completed in other law schools which are members of the Association of American Law Schools. However, credits will not be recognized in excess of those which might be obtained in a similar period in this Law School.

Advanced standing will not be granted for law work already counted toward the Bachelor of Arts or other pre-legal degree.

Advanced standing will not be granted toward meeting the requirements for the degrees of Juris Doctor or Master of Laws.

For the Graduate Degrees

*Master of Laws.**—A Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree from a member school of the Association of American Law Schools are required. Candidates for admission must have attained a *B* average on all work done for the Bachelor of Laws degree, except that, at the discretion of the Committee on Graduate Studies, applicants otherwise eligible may be admitted on proof of experience and attainment as an alternative. Advanced standing will not be granted for credits earned while a candidate for the first degree in law. Credits earned as an unclassified student will not be applicable toward meeting the requirements of the degree unless specific provision therefor is included in the letter of admission.

Master of Comparative Law and Master of Comparative Law (American Practice).—The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycée, or liceo; and (2) graduation in law from a recognized foreign university where training was in Civil Law.

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* One-half of the work necessary for graduation from an approved college or university completed prior to entry into military service may be accepted as satisfying the admission requirement for pre-legal work, provided the applicant completed not less than twenty months of continuous service in the armed forces of the United States during World War II and prior to the beginning of the 1948–49 fall semester.

Doctor of Juridical Science.—The following are required: a Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree, earned with high rank, from a member school of the Association of American Law Schools, and outstanding capacity for scholarly work in the field of law.

Unclassified Students

A person who is in good standing as a degree candidate in another law school which is a member of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student in order to earn credits for transfer to the other law school.

A person who is a member of the bar or a person, not a member of the bar, who is a graduate of a member school of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student.

Unclassified students participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at this Law School.

Continuing Legal Education Students

A simplified admission and registration procedure is provided for members of the bar desiring to register as continuing legal education students to take courses on a noncredit basis. Members of the bar desiring to register as degree candidates or as unclassified graduate students should file the regular application for admission form.

THE SCHOOL OF ENGINEERING

For the Bachelor's Degrees

Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering.—An acceptable certificate of graduation from an accredited secondary school, or the satisfactory passing of College Entrance Board examinations in secondary school subjects selected with the approval of the Director of Admissions is required.

Nine and one-half of the fifteen units required for entrance must be distributed as follows: three in English, two in algebra, one in plane geometry, one-half in plane trigonometry, one in physics or chemistry, and two in one foreign language or history. A graduate of an approved high school who does not offer for admission the particular subjects required for the engineering curriculum, but who does present not less than fifteen acceptable units, may be admitted on condition, if such deficiency in the distribution of units does not exceed two units.

ADVANCED STANDING

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be assigned by the School of Engineering to the extent that the work taken at previous institutions meets the requirements for the degree sought at this University, and subject to the general University regulations concerning satisfactory subsequent work.

For Graduate Study

For admission to graduate study the student must hold a Bachelor's degree from a recognized institution; satisfy the Committee on Graduate Studies of his capacity for productive work in the discipline; and give evidence of preparation which, in the opinion of the Committee, is adequate for graduate study in the field selected.

Applicants who have significant deficiencies in their preparation for graduate study may be admitted to the Division of Special Students to pursue prescribed programs on the undergraduate level. Completion of such programs with minimum grades of *B* will qualify them for admission as graduate students in the School of Engineering.

In some cases such undergraduate study may be carried on in addition to a limited graduate program. In no case may the undergraduate courses fulfill any part of the requirements for the graduate degree.

FOR DEGREE CANDIDACY

Application for admission to candidacy for a Master's degree must be made in writing to the Committee on Graduate Studies. To be accepted the applicant must have (1) been accepted for graduate study, (2) satisfactorily completed nine semester hours of graduate courses, and (3) give evidence of satisfactory personal and intellectual qualifications. In exceptional cases the requirement of nine semester hours of graduate courses may be reduced.

THE SCHOOL OF PHARMACY

For the Bachelor's Degree

Bachelor of Science in Pharmacy.—An Associate in Arts degree based on the curriculum in *Pharmacy* in the Junior College (see pages 69–70), or the equivalent is required.

A student who has received a Bachelor's degree from an accredited institution or who has completed work in the general cultural or foundational subjects of the pharmacy curriculum may be admitted to advanced standing. No more than one year of advanced standing will be granted a student from any institution other than an accredited college of pharmacy.

For the Master's Degree

Master of Science in Pharmacy.—A Bachelor of Science degree from an accredited institution is required. A superior record and professional promise are essential.

THE SCHOOL OF EDUCATION

For the Bachelor's Degrees

Bachelor of Arts in Education, Bachelor of Science in Home Economics, Bachelor of Science in Physical Education.—An Associate in Arts degree based on the *Education, Home Economics,* or *Physical Education* curriculum in the Junior College (see pages 70–71), or the equivalent from another accredited higher institution, or a certificate of graduation from an approved normal school or the equivalent is required. With the exception of Home Economics, applicants must be in possession of personality traits that give promise of success as a teacher.

For the Master's Degree

Master of Arts in Education.—To be admitted to candidacy for the degree of Master of Arts in Education the applicant must: (1) hold a Bachelor's degree from an accredited institution; (2) have an undergraduate quality-point index of 2.50 or above (*C* + average); (3) have demonstrated a genuine interest in teaching; (4) be in possession of personality traits that give promise of better-than-average success as a teacher.

To be admitted to candidacy in programs designed to prepare for service in guidance and administration two years of successful teaching experience are prerequisite.

For the Advanced Professional Certificate

Advanced Professional Certificate.—The Bachelor of Arts degree in Education or the Bachelor of Science degree in Physical Education from the School of Education, or the equivalent from another institution of higher learning; a Master's degree, from an accredited institution of higher learning, at least two years of successful teaching experience, and a permanent teaching or administrative license are required.

For the Doctor's Degree

Doctor of Education.—The degree of Master of Arts in Education, or the equivalent, and at least three years of satisfactory educational experience are required.

THE SCHOOL OF GOVERNMENT

For the Bachelor's Degree

Bachelor of Arts in Government.—An Associate in Arts degree based on the *Foreign Affairs, Public Affairs, Accounting, Business Administration,* or *Business and Economic Statistics* curriculum in the Junior College (see pages 72–73), or the equivalent is required.

For the Master's Degrees

A Bachelor's degree from an accredited college or university is required. A student from an unaccredited institution may be admitted at the discretion of the Committee on Admission and Advanced Standing, but will be required to take such extra work above the minimum requirements as may be prescribed.

A student admitted to candidacy must have attained a quality-point index of 3.00 (a *B* average) in his undergraduate major. An applicant whose scholastic average is below 3.00 in his major, or who lacks prerequisite courses, may be referred to the Division of Special Students to make up the deficiency.

Master of Arts in Government.—The applicant's undergraduate program must have included prerequisite courses, corresponding to an undergraduate major at this University, for the chosen field of graduate study.

Master of Arts in Public Administration.—An undergraduate major in a social science or equivalent work experience is required.

Master of Arts in Personnel Administration.—An undergraduate major in a social science or education, with the appropriate courses in psychology, is required.

Master of Business Administration.—An acceptable undergraduate major in Business Administration, or the equivalent, is required. Applicants who are deficient in such course work may be admitted and will be required to make up deficiencies over and above the normal Master of Business Administration program.

For the Doctor's Degree

Doctor of Business Administration.—A Master's degree in Business Administration or a related field, or the equivalent, and proficiency in statistics and accounting to the satisfaction of the Committee on Doctoral Studies are required.

THE COLLEGE OF GENERAL STUDIES

For information concerning the College of General Studies see pages 202–4.

The Division of University Students

Students 21 years of age or over who are not interested in working for a degree in this University may be considered for admission to the Division of University Students to take courses for which they have adequate preparation, as evidenced by previous scholastic records.

Students under 21 years of age who meet the entrance requirements of the Junior College but who are not seeking degree candidacy at this University may be admitted to the Division of University Students to pursue programs of study approved by the Dean.

If a student currently or previously registered in the Division of University Students applies for admission to degree candidacy, a maximum of 45 semester hours of credit will be considered for assignment, in so far as these credits are appropriate toward the degree sought.

In special instances, with the permission of the instructor, a person may be considered for admission as an auditor in a class without being required to take active part in the exercises or to pass examinations, but no credit will be allowed for such attendance.

The Division of Special Students

This is a non degree-granting division of the University in which the Director of Admissions may authorize the placement of students in the process of making up entrance deficiencies to degree-granting colleges and schools of the University.

Complete credentials must be submitted and evaluated before a tentative or definite plan of make-up may be prepared.

The Division of Air Science

The applicant must be a regularly enrolled, full-time, student; at least fourteen years of age; a citizen of the United States; physically fit; of good character; and a candidate for a Bachelor's degree.

CLASSIFICATION OF STUDENTS

Regular Students.—Regular students are those who have met the entrance requirements for candidacy and are registered for degrees.

University Students.—Persons not seeking degrees, as specified in the rules of the Division of University Students, may be admitted to this Division to pursue courses for which they have had adequate preparation.

Special Students.—Special students are those who are in the process of qualifying for admission to curricula in degree-granting colleges and schools of this University.

Additional information concerning curricula, courses offered, entrance requirements, or admission procedure may be obtained from the Office of the Director of Admissions.

REGISTRATION

Before a student may be admitted to registration he must have satisfied the Office of the Director of Admissions that he is qualified to enter the University (see "Admission", pages 13–23).

A student who has previously matriculated in the University, but who has not been in attendance during the semester prior to registration, should file an application for readmission in advance of registration.

Registration is for the semester unless otherwise indicated on the registration paper. No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in The George Washington University and another institution without the permission of the dean of the college, school, or division in which he is registered in The George Washington University. Allowance of credit for work done concurrently will be at the discretion of the appropriate Committee on Admission and Advanced Standing.

TIME AND PLACE OF REGISTRATION

Registration for all colleges, schools, and divisions except as noted below is conducted in Building C, 2029 G Street NW., between 9:00 A.M. and 7:00 P.M., during the following periods: *fall semester,* September 18 and 19; *spring semester,* January 29 and 30.

For the Law School: Stockton Hall, 720 Twentieth Street NW., between 9:00 A.M. and 7:00 P.M.: *fall semester,* September 18 and 19; *spring semester,* January 29 and 30.

For the School of Medicine: School of Medicine, 1335 H Street NW., between 9:00 A.M. and 4:00 P.M., September 11.

For the College of General Studies: at times and places designated in individual course announcements.

REGISTRATION CHANGES AND WITHDRAWALS

For regulations governing changes in registrations and withdrawals, see pages 26, 27–28, 49–50.

FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees have been adopted, effective September 1, 1958:

TUITION FEES

For each semester hour[*] for which the student registers (except for work in the Law School, for courses in Departments of Instruction in the School of Engineering, for courses in the College of General Studies, for work toward a Master's degree in Engineering, and for work taken by a candidate for a Doctor's degree)	$20.00
For each semester hour for which the student registers in the Law School	21.00
For each semester hour for which the student registers for courses in Departments of Instruction in the School of Engineering	22.00
For the degree of Doctor of Medicine, for two semesters[†]	1,000.00
For the degree of Doctor of Philosophy, Doctor of Education, or Doctor of Business Administration:	
For work[‡] leading to and including the Council Fellowship or General examination[§]	600.00
For work leading to and including the final examination[§]	600.00
For the degree of Doctor of Juridical Science:	
For work leading to and including the final examination[§]	600.00
For the degree of Master of Engineering Administration:	
For work leading to and including the Comprehensive Examination[§]	700.00
For the degree of Master of Science in Engineering:	
For work leading to and including the Comprehensive Examination[§]	800.00

ADDITIONAL COURSE FEES

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in three payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

GRADUATION FEES

Wherein the degree of Associate in Arts or Associate in Science is granted	$10.00

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[*] Payment of tuition for a Master's thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. If the preparation of the thesis extends beyond the second academic year, it must be registered for again, and tuition paid on the same basis as for a repeated course.

[†] Registration in the School of Medicine is for a period of two semesters. After the student has entered the course of instruction he is obligated for the full tuition for two semesters. No part of the tuition will be refunded upon withdrawal or dismissal for any cause.

[‡] This fee does not cover the cost of tuition for elementary courses (numbered 1 to 100).

[§] When a limited schedule is carried which extends the time of completion of the program of study to more than one year, the proportionate part of the charge may be fixed by the Treasurer.

Wherein a degree other than the Associate in Arts or Associate in Science degree is granted	25.00
Wherein an Advanced Professional Certificate in Education is granted	25.00
FEE FOR BINDING MASTER'S THESIS	6.00
FEE FOR PRINTING SUMMARY OF DOCTORAL DISSERTATION	85.00
SPECIAL FEES	
Application fee, charged each applicant for admission as a degree candidate, nonrefundable	10.00
Application fee, charged each applicant for admission as a non-degree candidate, nonrefundable	5.00
Scholastic-aptitude Test (when required for admission)	3.00
Graduate Record Examination fee (to cover two examinations), charged each candidate for a Bachelor's degree in Columbian College, the School of Engineering, or the School of Government at the time of registration for the final semester of study (excluding summer sessions)	5.00
Late-registration fee, charged each student who fails to register within the designated period	5.00
Change fee, charged each student for each change in program involving one course or more than one course	2.00
Withdrawal fee, charged each student who preregisters and withdraws prior to the regular registration	5.00
Service fee, charged each student for late payment of tuition (see "Payment of Fees")	2.00
Reinstatement fee, charged each student who is reinstated after suspension for delinquency in fees	5.00
Residence fee, charged each student wishing to maintain "in residence" status during any semester of absence from the University or after completion of tuition requirements:	
In the Law School	21.00
In the School of Engineering*	22.00
In all other colleges, schools, and divisions	20.00
For special physical examination	2.00
Special fee, Law School ($1.25, Student Bar Association activities; $1.75, *Law Review*), charged each student in the Law School for each semester or any part thereof except the summer term	3.00
Engineers' Council fee, charged each student in the School of Engineering for each semester or any part thereof except the summer term	1.50
For each examination to qualify for advanced standing and for each special examination	5.00
Laboratory checkout fee, charged each student in chemistry and pharmacy courses who fails to check out of the laboratory by the time set by the instructor	3.00
Transcript fee, charged for each transcript of record after the first	1.00

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library facilities, except as otherwise designated; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described under Health Administration, pages 215–16. These privileges, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

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* Candidates for the Master's degrees in the School of Engineering who have paid in full the fee for work leading to and including the Comprehensive Examination but whose Comprehensive Examinations have not been completed will be granted one semester without payment of residence fee.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each semester are due and payable in advance at the time of registration.

In exceptional cases, subject to the approval of the Treasurer, the student may sign a contract for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One-third at the time of registration; one-third on November 3, one-third on December 1.

Spring Semester.—One-third at the time of registration; one-third on March 2; one-third on April 1.

Arrangements for the above may be made with the Office of the Cashier at the time of registration.

A student who fails to meet payments when due, but who pays his fees from the fourth to the fifteenth, inclusive, of the month in which payment is due, is charged a service fee of $2. A student who fails to meet payments by the fifteenth of the month in which payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of $5.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Applications for withdrawal from the University or for change in class schedule must be made in person or in writing to the dean of the college, school, or division in which the student is registered. Notification to an instructor is not an acceptable notice (see "Withdrawal", pages 49–50).

In authorized withdrawals and changes in schedules, financial adjustments will be made as follows:

Fall Semester.—Withdrawal dated on or before October 31, cancellation of two-thirds of tuition charges; withdrawal dated on or before November 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to November 30.

Spring Semester.—Withdrawal dated on or before February 28, cancellation of two-thirds of tuition charges; withdrawal dated on or before March 31, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to March 31.

In no case will a refund be made of the first third of the total tuition charges unless the registration is in advance and is cancelled before the regular registration day. In this case a withdrawal fee of $5 is charged and tuition fees refunded. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this payment be credited to another semester.

Any student in chemistry or pharmacy who fails to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a checkout fee in the amount of $3. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Any student enrolled in the Air Force ROTC who fails to turn in uniforms, equipment, and textbooks, on separation from the Corps, will be charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, FINANCIAL AID

FELLOWSHIPS AND GRADUATE ASSISTANTSHIPS

The following fellowships and graduate assistantships are available. Unless otherwise specified, applications should be submitted not later than April 1 preceeding the period for which the award is to be made.

University Teaching Fellowships.—These are assigned for the academic year to the various departments of instruction. The applicant is expected to be a prospective candidate for a Doctoral degree, and to have a Master's degree or equivalent in the general field of his future doctoral study. Each Teaching Fellow receives an annual stipend (on a nine-month basis) of up to $1,350 plus full tuition for whatever schedule of study or research his fellowship duties permit him to carry. Stipends vary with the work load of the individual Teaching Fellow. Normally a University Teaching Fellow renders half-time service in classroom or laboratory assignments to the department of instruction directing his doctoral study. Application should be made to the executive officer of the department of instruction concerned.

Graduate Teaching Assistantships.—These are open in various departments of instruction to candidates for the Master's degrees. Each graduate teaching assistant renders a designated unit of service to his major department of instruction, and receives, depending upon his teaching or laboratory assignment, up to $1,215 on a nine-month basis plus tuition for the program of studies which the duties of his assistantship permit him to carry. Application should be made to the executive officer of the department of instruction concerned.

Law School Research Assistantships.—Student research assistantships are available each year to students currently enrolled in the Law School, preference being given to applicants who are completing their second year. Each assistant receives an annual stipend. Awards are made on the basis of academic standing, financial need, and capacity for leadership. Research assistants have duties similar to those of teaching fellows. Applications should be submitted to the Dean of the Law School not later than May 1.

Law School Teaching Fellowships.—Teaching fellowships are available each year in the Law School to prospective candidates for the Master of Laws degree. Each fellow receives an annual stipend, plus tuition for the academic year. Teaching fellows follow an approved program of study and research, assist members of the Faculty in the guidance of first-year students, and supervise student work in legal bibliography and the drafting of legal instruments. Upon satisfactory completion of the year's work, a fellow is recommended for the degree of Master of Laws. Applications should be submitted to the Dean of the Law School not later than March 1.

Special Fellowships

The following Special Fellowships, supported by endowment, are available. Inquiry concerning them should be addressed to the executive officer of the department concerned.

Isabella Osborn King Research Fellowships.—Fellowships varying in amount from $750 to $3,000, established in 1927 by bequest of Mrs. Isabella Osborn King, are offered in the biological sciences and are intended to foster research for which the libraries and scientific establishments in Washington provide special facilities.

Robin Miller Research Fellowship.—A fellowship in medicine in the amount of $1,800, established in 1953 by bequest of Mrs. Robin Miller, is offered for the study of cardiovascular diseases.

Thomas Bradford Sanders Fellowships.—Fellowships varying in amount from $900 to $1,500 plus tuition, established in 1928 by bequest of Miss Addie Sanders in memory of her brother, Thomas Bradford Sanders, are offered in various departments of science.

The following Special Fellowships are made possible by annual gifts.

Louisiana Scottish Rite Fellowships.—The Ancient and Accepted Scottish Rite of Freemasonry, Southern Jurisdiction, U.S.A., Consistories in New Orleans, Shreveport, Lake Charles, and Baton Rouge, Louisiana, offer seven fellowships in the amount of $1,800 each to graduates of accredited colleges in Louisiana who wish to enroll in the School of Government to train for government leadership—federal, state, or local.

SCHOLARSHIPS

Scholarships are awarded for the academic year unless otherwise specified and are credited in equal parts for each semester. Each holder must carry a full schedule of academic work (fifteen semester hours or in the professional schools the full prescribed schedule) during the period for which the scholarship is awarded. Applicants* must have established an academic record in courses at this institution, and should apply on prescribed forms which must be filed in the Office of the Chairman of the Committee on Scholarships not later than April 1 preceding the academic year for which the scholarship is to be awarded. Further information may be obtained from the Chairman of the Committee on Scholarships.

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* Except in the case of the Alpha Zeta Omega Scholarship, the Alumni Scholarships, the Crown Photo Scholarship, the D. C. Pharmaceutical Association Scholarship, the Estella Constance Drane Scholarship, the School of Engineering Scholarships, General Motors College Scholarship, the High School Scholarships, the Kappa Alpha Theta Scholarship, the Law School Scholarships, the Eugene and Agnes E. Meyer Scholarships, the National League of Masonic Clubs Scholarship, the John O. Rankin Scholarship, the Student Activities Scholarships, and the Texaco Scholarship.

Alpha Zeta Omega Scholarship.—This scholarship, in the amount of $500, was established by Pi Chapter of Alpha Zeta Omega Pharmaceutical Fraternity. It is awarded annually to a member of the graduating class of one of the public high schools of the District of Columbia and nearby Maryland and Virginia who intends to enroll in the pharmacy curriculum and complete the requirements for the degree of Bachelor of Science in Pharmacy.

Alumni Scholarships.—Five scholarships are available each year in the Junior College, upon the recommendation of regional alumni clubs, to outstanding men graduating from accredited high schools. The scholarships cover tuition costs for four semesters (beginning with the fall semester) of full-time work but do not include special fees such as laboratory charges, room, board, or other expenses. To retain the scholarship, the student must maintain a *B* average. Additional information may be obtained from the Director of Alumni Relations.

American Foundation for Pharmaceutical Education Scholarship.—A scholarship fund, in the amount of $400, established by the American Foundation for Pharmaceutical Education, is available annually to junior and senior students of the School of Pharmacy who are in the upper quarter of their class or who are maintaining average grades of not less than *B*. The scholarship funds are awarded on the recommendation of the Committee on Scholarship of the School of Pharmacy.

American Society of Women Accountants.—This scholarship, in the amount of $100, established in 1953 by the District of Columbia Chapter of the American Society of Women Accountants, is available to a sophomore, junior, senior, or postgraduate woman majoring in accounting whose academic record is good and who needs aid in continuing her education.

Byron Andrews Scholarship.—This scholarship, in the amount of $300, established in 1920 by Mrs. Belle Fisk Andrews in memory of her husband, Byron Andrews, is available "for ambitious and needy students, who desire to pursue courses in English, Latin, journalism, history, literature, or political science".

Anna Bartsch Scholarship.—This scholarship, in the amount of $500, established in 1946 by Dr. Anna Bartsch-Dunne, as a memorial to her mother, Anna Bartsch, is available to a woman in the School of Medicine, "of outstanding scholarship, character, and promise, who intends to make the practice of medicine her life profession". The award is made upon the recommendation of the Faculty of the School of Medicine.

Everett Lamont Bradley Scholarship.—This scholarship, in the amount of $200, established in 1954 by bequest of Alice R. H. Bradley in memory of her son, Everett Lamont Bradley, is available to a student in the School of Medicine.

Emma K. Carr Scholarships.—Six scholarships in the amount of $400 each and ten of $100 each, established in 1932 by Mrs. Emma K. Carr, are available to "young men (of the white race) for undergraduate or postgraduate work, considering character, capacity, and need".

Henry Harding Carter Scholarship.—This scholarship, in the amount of $500, established in 1896 by Mrs. Maria M. Carter in memory of her husband, Henry Harding Carter, is available to a deserving student who is preparing for the civil-engineering profession.

Maria M. Carter Scholarship.—This scholarship, in the amount of $100, established in 1871 by Mrs. Maria M. Carter, is available to a young man.

Crown Photo Scholarship.—This scholarship, in the amount of $500, established in 1958 by the Crown Photo Service of Washington, D. C., is to be awarded annually to a member of the graduating class of one of the public high schools of the District of Columbia, nearby Maryland, or Virginia, who intends to enroll in the pharmacy curriculum and complete the requirements for the degree of Bachelor of Science in Pharmacy.

Daughters of the American Revolution Scholarship.—This scholarship, in the amount of $450, established in 1952 by the District of Columbia Daughters of the American Revolution, is available to junior and senior students, preferably women, who are descendants of patriots of the American Revolution.

Isaac Davis Scholarship.—This scholarship, in the amount of $80, was established in 1869 by the Honorable Isaac Davis of Massachusetts. Nominations for the scholarship may be made "by the founder or his eldest lineal descendant". In case no such nomination is made, the scholarship is to be awarded by the University.

District of Columbia Pharmaceutical Association Scholarship.—This scholarship, in the amount of $500, was established in 1954. It is awarded annually to a member of the graduating class of one of the public or parochial high schools of the District of Columbia and nearby Maryland and Virginia who intends to enroll in the pharmacy curriculum and complete the requirements for the degree of Bachelor of Science in Pharmacy.

Charles Worthington Dorsey Memorial Scholarship.—This scholarship, established in 1947 as a memorial to Charles Worthington Dorsey, Bachelor of Laws, '81, Master of Laws, '82, is awarded upon the recommendation of the Faculty of the Law School to a needy and promising graduate of Columbian College or other division of the University, with a Bachelor of Arts or other equivalent degree, who has maintained an average of *B* as an undergraduate student and who desires to pursue the study of law as a full-time student. The scholarship covers tuition for the course leading to the first degree from the Law School, Bachelor of Laws or Juris Doctor, provided that the holder maintains an average of *B*. The right is reserved to suspend the benefits of the scholarship for cause at any time. This scholarship is awarded ordinarily once every three years.

Estella Constance Drane Scholarship.—This scholarship in the amount of $200, established in 1957 by bequest of Estella Constance Drane in memory of the boys of the former Washington Business High School who served in World War I, is available annually to a graduate of Roosevelt High School upon the recommendation of the Scholarship and Award Committee of the faculty of Roosevelt High School and the approval of the Committee on Scholarships of The George Washington University.

School of Engineering Scholarships.—Four scholarships are available each year in the School of Engineering to graduates of accredited secondary schools. The holders of these scholarships must carry a full program in the School of Engineering.

Each scholarship is a full-tuition scholarship but does not cover special fees. Each scholarship is for four academic years (summer work is not to be included), provided the holder thereof meets all academic and other standards of the University.

To retain a School of Engineering scholarship, an average of *B* and a satisfactory standard of deportment must be maintained. In case a student marries after the award is made, the scholarship is forfeited. If for any reason a holder of a School of Engineering scholarship resigns or is dropped from said scholarship, the scholarship remains unfilled.

Henry Parsons Erwin Scholarship.—This scholarship, in the amount of $300, established in 1955 by Mrs. Helen B. Erwin as a memorial to her husband, Henry Parsons Erwin, a former Trustee of the University, is available for a student in Engineering.

Robert Farnham Scholarship.—This scholarship, in the amount of $100, given to the University in 1871 by Mrs. Robert Farnham, is available to a student in Columbian College.

General Motors College Scholarship.—This scholarship, established in 1955 by General Motors Corporation, is available for an incoming freshman student who is a citizen of the United States and demonstrates outstanding talent, high personal qualifications, and financial need. The amount of the award has been made flexible and will range from an honorary award of $200, up to an award of $2,000 per year, depending upon the demonstrated need of the individual. It is renewable for the four years of undergraduate work provided the student continues to meet the high standards established for the holder of this award.

Georgetown Business and Professional Women's Club Scholarship.—This scholarship, in the amount of $100, established in 1958 by the Georgetown Business and Professional Women's Club, is available to a woman student in the field of Science.

Grants-in-Aid Scholarships.—The University has established a limited number of Grants-in-Aid Scholarships for men and women which are awarded annually by the University Committee on Scholarships. These grants are designed to promote the physical, mental, moral, and educational leadership of worthy young men and women. Such aid in no instance shall exceed the amount of institutional expenses.

Anna Spicker Hampel Scholarship.—This scholarship, in the amount of $40, established in 1949 by Mrs. Evelyn Hampel Young, is available for scholarship aid to young married women students in the School of Education or Columbian College.

Elma Lewis Harvey Scholarship.—This scholarship of $200 was founded in 1921 by Mrs. Emma Elizabeth Harvey in memory of her daughter, and is awarded every four years, or as often as vacant, to a young woman in Columbian College of the Protestant faith and the Caucasian race who shall be selected for scholarship and moral qualifications.

Hazelton Scholarship.—This scholarship, in the amount of $350, established in 1950 by the bequest of Lillie S. Hazelton, is awarded annually "for the use and assistance of needy and worthy students."

High School Scholarships.—The Board of Trustees of the University offers thirty-four scholarships to graduates of public high schools in the Washington Metropolitan Area: sixteen in the District of Columbia area; four each in the Montgomery, Prince Georges, Arlington, and Fairfax areas; and two in the Alexandria city area, the home city of General George Washington. Scholarships are divided equally between men and women. One of the District of Columbia Scholarships, designated as the *Amos Kendall Scholarship*, was established in 1869 by the late Honorable Amos Kendall.

Each scholarship is awarded annually to a member of the graduating class who plans to enroll in the Junior College for the freshman and sophomore years and thereafter in Columbian College or any one of the professional schools announcing a preprofessional curriculum in the Junior College. The scholar must register the following September and carry each semester a full academic program as prescribed in the Junior College curricula or in the college or school in which he carries his upper division work; in no case is the scholar permitted to carry less than fifteen semester hours.

Each scholarship is a full-tuition scholarship but does not cover special fees. Each scholarship is for four academic years (summer work is not to be included), provided the holder thereof meets all academic and other standards of the University.

To retain a high school scholarship, an average of *B* and a satisfactory standard of deportment must be maintained. In case a student marries after the award is made, the scholarship is forfeited. If for any reason a holder of a high school scholarship resigns or is dropped from said scholarship, the scholarship remains unfilled.

High School Discussion Conference Scholarships.—Three scholarships are available each year in the Junior College to high school seniors who participate in the George Washington University High School Discussion Program. These scholarships cover tuition for one year, but do not include laboratory fees or other special fees. For information concerning application, consult the Department of Speech.

Kappa Alpha Theta Scholarship.—This scholarship, in the amount of $500, established by the Washington alumnae of Kappa Alpha Theta, is available for the training of a clinician in speech correction.

Kappa Psi Scholarship.—This scholarship, in the amount of $150, is made available by Gamma Tau Chapter and the District of Columbia Graduate Chapter of Kappa Psi Pharmaceutical Fraternity. It is awarded annually to a student in the School of Pharmacy who is in need of financial aid.

Law School Scholarships.—Scholarships are available each year in the Law School to graduates of accredited colleges. Each scholarship provides full three-year tuition in the morning division of the Law School. Candidates must have graduated in the upper fifth of their class and must have demonstrated qualities of leadership in addition to scholastic attainment. To retain the scholarship, the successful candidate must maintain a *B* average. Application must be made before March 1 to the Dean of the Law School.

Eugene and Agnes E. Meyer Scholarships.—A scholarship fund, in the amount of $3,500, established in 1952 by the Eugene and Agnes E. Meyer Foundation, is available annually "to assist promising students or applicants in meeting the costs of furthering their education, with preferential consideration to children of persons who are employed in public service, including service in the armed forces or the judiciary."

A. Morehouse Scholarship.—This Scholarship was established by Mr. A. Morehouse in 1861. It carries an annual stipend of $125, which is available for an undergraduate "intending to enter the Christian ministry".

The National League of Masonic Clubs Scholarship.—This scholarship, in the amount of $500 annually to be applied toward payment of tuition costs only, is offered by the National League of Masonic Clubs. It is awarded every four years, or as often as vacant, to the son or daughter of a Master Mason who is a member of a Masonic Club affiliated with the National League of Masonic Clubs. To continue to hold this scholarship, the student must maintain a satisfactory academic record.

Newspaper Scholarships.—One scholarship is available each year to a candidate recommended by each of the following newspapers: *The Washington Daily News, The Washington Post and Times Herald,* and *The Evening Star.* The holder of the scholarship must be an employee of the newspaper. These scholarships are valid for four academic years, provided the holder continues in the employ and is recommended by the newspaper, and maintains a satisfactory academic record and a high standard of deportment. They cover tuition but do not include laboratory fees, graduation fees, or other special fees.

Panhellenic Association of Washington, D. C., Scholarship.—A scholarship, in the amount of $200 to be applied to tuition fees, has been established by the Panhellenic Association of Washington, D. C. This scholarship is available annually to a woman student in her sophomore or junior year, who is a member of a National Panhellenic Conference sorority, has done the most to promote good social relations among the sororities on the campus, is an outstanding leader in student affairs sponsored by the University, and has a 3.0 (*B*) or better average.

Paul Pearson Scholarship.—This scholarship, in the amount of $200, established in 1940 by bequest of Paul Pearson and "to be known as the Dr. Paul Pearson award", is available to a student in the School of Pharmacy, upon the recommendation of the Faculty of that School.

Phi Delta Delta Scholarship.—Zeta Chapter of Phi Delta Delta Legal Fraternity (International) offers annually a scholarship in the amount of $40 to the woman student in the sophomore class who has excelled in scholastic achievement and service to the Law School in her first year.

Phi Delta Gamma Scholarship.—This scholarship, established in 1956 by Beta Chapter of Phi Delta Gamma, in the amount of $100, is awarded annually to a woman who is a candidate for an advanced degree at the University.

John O. Rankin Scholarship.—This scholarship, established in October 1951, in recognition of Mr. Rankin's bequest to the University, is to be awarded to a resident of Pemiscot County, Missouri, upon the recommendation of the Caruthersville Rotary Club and the Hayti Lions Club in this County. The scholarship covers tuition costs for the four-year curriculum in Foreign Affairs, but it does not include laboratory fees, graduation fees, or other special fees. To retain the scholarship, the recipient must carry a full program and maintain an average of *B*. The scholarship is awarded every four years or as often as vacant. Further information may be obtained from the Chairman of the Committee on Scholarships.

Lula M. Shepard Scholarships.—Two scholarships, in the amount of $450 and $300, respectively, established in 1946 by bequest of Lula M.

Shepard, are available to "worthy Protestant students desiring to enter the Foreign Service Department of the School of Government".

David Spencer Scholarship.—This scholarship of $175, established in 1918 by Miss Louisa J. Spencer, is available under certain restrictions.

Mary Lowell Stone Scholarship.—This memorial scholarship, in the amount of $200, established in 1893, is available to a woman student of science in Columbian College.

Charles Clinton Swisher Scholarships.—These scholarships, in the amount of $400 and $300, respectively, established in 1941 by bequest of Professor Charles Clinton Swisher, are available, under certain conditions, to students of medieval history.

Texaco Scholarship.—This scholarship, established in 1956 by the Texas Company, covers tuition, fees, and textbooks, and is awarded annually to a young man entering the freshman class in a curriculum which will prepare him for a career in the petroleum industry. It is renewable for the four years of undergraduate work provided the student maintains high standards of scholarship and deportment.

William Walker Scholarship.—This scholarship, established in 1824 by William Walker, Esq., carries an annual stipend of $300, which is available for an undergraduate intending to enter the Christian ministry.

John Withington Scholarship.—This scholarship of $150 was established in 1830 by the New York Baptist Theological Seminary.

Wolcott Foundation Scholarships in the Field of Foreign Affairs.—Scholarships sponsored by the Wolcott Scholarship Foundation of High Twelve International, Inc., are available to graduates of accredited colleges who wish to enroll in the School of Government for graduate work in foreign affairs. Preference is given to students who themselves are affiliated with, or whose parents are affiliated with, High Twelve International or the Masonic Order. The scholarships cover tuition for one year of graduate study in residence.

Women's Advertising Club of Washington Scholarship.—This scholarship, in the amount of $300, established in 1958 by the Women's Advertising Club of Washington, is available each year to a woman entering her junior or senior year in advertising and public relations.

Ellen Woodhull Scholarship.—This scholarship of $40, established by Ellen M. E. Woodhull, is available to a student in Columbian College.

The Zonta Club of Washington, D. C., Scholarship.—This Scholarship, in the amount of $300, offered by the Zonta Club of Washington, D. C., is available to a woman who is a senior or graduate student with special interest in a professional or business career.

THE COLUMBIAN WOMEN SCHOLARSHIP FUNDS

The Columbian Women Scholarships are awarded to women students by the Scholarship Committee of Columbian Women. The awards are based on financial need and scholastic attainment. Applications for these scholarships should be addressed to the Chairman of the Scholarship Committee, Columbian Women, The George Washington University, Washington 6, D. C., not later than May 15 for the Fall Semester, and not later than January 1 for the Spring Semester.

Nellie Maynard Knapp Scholarship Fund.—The income from this fund of $5,000, established in 1915 in memory of a former president, Mrs. Martin A. Knapp, is available for scholarships for women.

Founders of Columbian Women Scholarship Fund.—The income from this fund of $5,000, established in 1920, is available for scholarships.

Lillian Young Herron Scholarship Fund.—The income from this fund of $5,000, established in 1925 and named in 1930 in memory of a former president, is available for scholarships.

Elizabeth V. Brown Scholarship Fund.—This fund of $1,200 was established in 1925 by the College Women's Club of Washington, D.C., in memory of the late Elizabeth V. Brown. The income is available for a scholarship for a woman student in the School of Education.

College Women's Scholarship Fund.—The income from this fund of $500, established in 1926 by the College Women's Club of Washington, D. C., is available for scholarship aid.

Lewes D. and Myrtie H. Wilson Memorial Scholarship Fund.—This fund of $1,000 was established by Miss Elizabeth Wilson in 1926 as a memorial to her parents, Lewes D. and Myrtie H. Wilson. The income is available for a scholarship in the School of Medicine.

Grace Ross Chamberlin Scholarship Fund.—The income from this fund of $2,300, established in 1932 in honor of a former president, is available for scholarship aid.

Janet McWilliam Scholarship Fund.—The income from this fund of $1,000, established in 1954 in honor of a former president, is available for scholarship aid.

Rose Lees Hardy Foundation Scholarship Fund.—The income from this fund of $2,000, established in 1957 in memory of Rose Lees Hardy, an alumna of the University, is available for scholarship aid.

PRIZES

Alpha Chi Sigma Prizes.—Alpha Pi Chapter of Alpha Chi Sigma Fraternity offers annually the following prizes:

A *Handbook on Chemistry and Physics* is awarded to each of the three students who carry at least eighteen semester hours during the freshman year and attain the highest averages in freshman chemistry.

The name and year of graduation of the student who has attained the highest quality-point index in courses in chemistry will be inscribed on a bronze plaque. The winner must have had at least sixteen hours of chemistry including the final semester at The George Washington University.

Alpha Delta Pi Prize.—Alpha Pi Chapter of Alpha Delta Pi Fraternity offers an annual prize of $10 to the woman member of the junior class with the most outstanding record in scholarship, extra-curricular activities, and service to the University.

Alpha Kappa Psi Prize—Beta Mu Chapter of Alpha Kappa Psi Fraternity awards annually a key to the male student who has completed ninety semester hours at The George Washington University and has attained the highest average grade in economics, business administration, public accounting, public finance, and foreign commerce. The name of the winner and the year of the award will be engraved on a plaque in the office of the Dean of the School of Government.

Alpha Zeta Omega Prize.—The Ladies' Auxiliary, Pi Chapter, of the Alpha Zeta Omega Pharmaceutical Fraternity offers annually a copy of *The United States Dispensatory* to the freshman student in pharmacy, who has completed at least fifteen semester hours in the University and who has attained the highest average in his courses.

American Institute of Chemists Prize.—The District of Columbia Chapter of the American Institute of Chemists offers an annual prize of a medal and a one-year subscription to *The Chemist* to that graduating student, majoring in chemistry, who excels in scholarship and in the personal qualities of integrity and leadership.

Byrne Thurtell Burns Memorial Prize.—This prize of $65 is awarded to the senior majoring in chemistry who shows the greatest proficiency in organic chemistry, as evidenced by a comprehensive examination, and who possesses such qualifications of mind, character, and personality as to give promise of future achievement.

Martin L. Cannon Memorial Prize.—Pi Chapter of the Alpha Zeta Omega Pharmaceutical Fraternity offers annually a copy of *The United States Dispensatory,* in memory of Dr. Martin L. Cannon, to the student in pharmacy receiving his Associate in Arts degree, who throughout his course has obtained the highest grades and at the same time contributed most to the student activities in the School of Pharmacy.

Chi Omega Prize.—Phi Alpha Chapter of Chi Omega Fraternity offers annually a prize of $25 to be awarded to the woman student in the graduating class with the highest record in the following social sciences: economics, sociology, political science, and history; combined with general excellence.

John Henry Cowles Prizes.—These prizes, founded in 1943 by John H. Cowles, Grand Commander of the Supreme Council of the Thirty-third Degree (Mother Council of the World) of the Ancient and Accepted Scottish Rite of Freemasonry, Southern Jurisdiction of the United States of America, are awarded annually to the best two scholars in the senior class of the School of Government. The prizes are as follows: first prize, $100; second prize, $50.

DeWitt Clinton Croissant Prize.—This prize of $50, established by the late Professor DeWitt Clinton Croissant, is awarded annually to the undergraduate student who as a member of one of the University courses in drama or as a participant in University dramatics submits to the English Department the best essay on drama or the theatre.

E. K. Cutter Prize.—The E. K. Cutter Prize in English was established by the late Marion Kendall Cutter "for excellence in the study of English." An annual prize of $60 is awarded to the member of the graduating class whose record in English, combined with general excellence, shows most marked aptitude for and attainment in English studies.

Isaac Davis Prizes.—These prizes, established by the Honorable Isaac Davis, of Massachusetts, in 1847, are awarded annually to such members of the senior class as shall have made the greatest progress in public speaking during their connection with the University. The prizes are as follows: first prize, $25; second prize, $20; third prize, $15.

The award of these three prizes is determined by a public-speaking contest in which the participants deliver original orations. Only members of the senior class who are candidates for the degree of Bachelor of Arts or Bachelor of Science are eligible to compete.

Delta Gamma Prize.—Beta Rho Chapter of Delta Gamma Fraternity offers annually a prize of $10 to the woman member of the freshman class who at the end of that year has the most outstanding record in scholarship, extra-curricular activities, and service to the University.

Delta Zeta Prize.—Delta Zeta Sorority offers annually a prize of $10 to be awarded to the student maintaining the highest average in Zoology 1–2.

Ellsworth Prize.—The Ellsworth Prize of $25, established by the late Mr. Fritz von Briesen, is awarded to the student doing the best work in the subject of Patent Law Practice.

Elton Prize.—The Elton Prize of $30, established by the Reverend Romeo Elton, of Exeter, England, is awarded annually to the student having the highest average in the most advanced course in the Greek language and literature.

Jesse Frederick Essary Prize in Journalism.—This memorial prize of $200, established in 1948 by the late Helen Essary Murphy, is awarded annually to a student who has given promise of sound citizenship and who submits the best printed and published evidence of ability in "forthright reporting" and good journalistic writing, either in a student publication or elsewhere.

Joshua Evans III Prize in the Political and Social Sciences.—This memorial prize of $75, "established by friends because of an outstanding life," is awarded annually to that man in the graduating class of The

George Washington University "who has demonstrated his signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his fellows."

Willie E. Fitch Prize.—The Willie E. Fitch Prize of $75, established in 1883 by James E. Fitch, in memory of his son, is awarded annually to a senior student for the best examination in chemistry.

Allie S. Freed Prize.—This prize of $40 established in 1957 by Mrs. Allie S. Freed, is to be given annually to a member of the graduating class in the School of Medicine who has demonstrated exceptional proficiency in the field of Preventive Medicine.

Charles Glover Prize.—This prize, established in 1957 by Charles Carroll Glover, Jr., a Trustee of the University, in memory of his great-grandfather, Charles Glover, an illustrious member of the bar of the District of Columbia, consists of selected law books and is awarded annually to the student in the Law School who has attained the highest average grade in the third-year, full-time course.

Alice Douglas Goddard Prize.—This prize of $75 was established in 1941 by Frederick Joseph Goddard of Georgetown, D. C., in memory of Alice Douglas Goddard, and is awarded annually to the upper division student making the highest average in American literature.

Edward Carrington Goddard Prize.—This prize of $75 was established in 1923 by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D. C., in memory of Edward Carrington Goddard, class of '81, and is awarded to the junior or senior student making the highest average in the French language and literature.

James Douglas Goddard Prize.—This prize of $75 was established in 1923 by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D.C., in memory of James Douglas Goddard, class of '01, and is awarded to the senior student making the highest average in pharmacy.

Morgan Richardson Goddard Prize.—This prize of $75, was established in 1923 by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard, of Georgetown, D. C., in memory of Morgan Richardson Goddard, and is awarded to the junior or senior student making the highest average in the following fields: economics, business administration, foreign commerce, and public accounting.

Gardiner G. Hubbard Memorial Prize in United States History.—This prize of $60 was established by Mrs. Gertrude M. Hubbard in memory of her husband, the late Gardiner G. Hubbard, and is awarded annually to that member of the graduating class majoring in history who has maintained the highest standing in courses in United States history.

Kappa Beta Pi Prize.—Eta Alumnae Chapter of Kappa Beta Pi Legal

Sorority offers an annual prize which consists of a copy of Blackstone's *Commentaries* or a legal dictionary to be awarded to the woman law student in the freshman class who attains the highest average for the freshman year.

Kappa Kappa Gamma Prize.—Kappa Kappa Gamma Sorority offers annually a prize of $10 to the full-time freshman who achieves the best record in Botany 1 and 2.

John Bell Larner Prize.—This prize, established by the bequest of John Bell Larner, consists of a medal which is awarded annually to that member of the graduating class in the Law School who attains the highest average grade in the entire course for the degree of Bachelor of Laws or Juris Doctor.

Huron W. Lawson Prize.—This prize of $100, established in 1957 by Mrs. Huron W. Lawson in memory of her husband, Dr. Huron W. Lawson, who was a distinguished member of the Medical Staff of The George Washington University, is to be presented annually to a student of the graduating class in the School of Medicine who has demonstrated exceptional proficiency in the field of Obstetrics and Gynecology.

Martin Mahler Prize in Materials Testing.—This prize, established in 1953 by Martin Mahler, consists of a one-year membership in the American Society for Testing Materials and is awarded to the upper division or graduate student in engineering who submits the best reports on tests in the Materials Laboratories course with preference given to prestressed concrete tests.

Mortar Board Prize.—This prize, consisting of a silver cup, is awarded annually to the woman student in the sophomore class having a scholarship average of *B* or higher and the most outstanding record in activities.

Julius S. Neviaser Prize in Orthopedic Surgery.—This prize of $100, established in 1956 by Dr. Julius S. Neviaser, is awarded annually to the student of the junior class of the School of Medicine who scores the highest grade in a written examination in Orthopedics.

Omicron Delta Kappa Prize.—Alpha Delta Circle of Omicron Delta Kappa Fraternity offers annually a plaque to be awarded to "that member of the senior class who throughout his course has done the most constructive work in the furtherance and upbuilding of the University student activities".

John Ordronaux Prizes.—These prizes were established in 1909 by the bequest of John Ordronaux.

The amount of $150 is awarded to the member of the graduating class in the School of Medicine who has the highest scholastic standing.

The amount of $75 is awarded annually to the student in the Law School who has attained the highest average grade in the first-year, full-time course; and $75 to the student who has attained the highest average grade in the second-year, full-time course.

Phi Delta Kappa Prize.—This prize, established in 1956 by Beta Gamma Chapter of Phi Delta Kappa, consists of a $50 United States Government Savings Bond and is presented annually to the outstanding senior man in the teacher education program in the School of Education.

Phi Eta Sigma Prize.—The George Washington University Chapter of Phi Eta Sigma offers annually to the male student attaining the highest scholastic average in his first full semester of work, a choice book selected from the field of the recipient's major interest. The winner's name will be engraved on a plaque in the Office of the Dean of the Junior College.

Pi Beta Phi Prize.—A prize of $20 is awarded annually by the District of Columbia Alpha Chapter of Pi Beta Phi Fraternity to that woman member of the senior class who throughout her college course has done the most constructive work in the promotion of student activities among the women of the University.

Pi Lambda Theta Prize.—This prize, established in 1956 by Alpha Theta Chapter of Pi Lambda Theta, consists of a $50 United States Government Savings Bond and is presented annually to the outstanding senior woman in the teacher education program in the School of Education.

Psi Chi Prizes.—The George Washington University Chapter of Psi Chi, national honorary society in psychology, offers annually two awards in the field of psychology; the first, $25 to the best undergraduate student in Experimental Psychology; the second, $25 to the graduate student submitting the best Master's thesis in Psychology.

Ruggles Prize.—The Ruggles Prize of $35, established by Professor William Ruggles in 1859, is awarded annually to a candidate for a baccalaureate degree for excellence in mathematics.

Sigma Kappa Prize.—Zeta Chapter of Sigma Kappa Sorority offers an annual prize of $10 to the student with the highest grade in the final examination in General Chemistry.

Sigma Tau Prize.—Xi Chapter of Sigma Tau Fraternity offers annually a medal to be awarded to that member of the freshman class in the School of Engineering who maintains the highest scholastic standing in the work of the entire year.

Society of Colonial Wars in the District of Columbia Prize.—This award, in the form of a gold medal, established in 1953 by the Society of Colonial Wars in the District of Columbia, is to be awarded to a candidate for a graduate degree who, in the judgment of the Faculty of the Department of History, submits a thesis or dissertation demonstrating excellence in historical research in American Colonial history. The University reserves the right to withhold the award if no thesis or dissertation attaining the required degree of excellence is submitted.

Staughton Prize.—The Staughton Prize of $30, established by the

Reverend Romeo Elton, is awarded annually to the student making the best record in the most advanced course in the Latin language and literature.

James MacBride Sterrett, Jr., Prize.—This prize, established in 1911 by Professor James MacBride Sterrett in memory of his son, consists of the *American Institute of Physics Handbook* awarded annually to that student who obtains the highest average in Physics 6, 7, and 8.

Charles Clinton Swisher Historical Club Prize.—This prize of $100, established in 1936 by the Charles Clinton Swisher Historical Club and augmented in 1941 by the bequest of Professor Charles Clinton Swisher, is awarded annually to the student who submits the best essay covering some phase of medieval history.

Theta Tau Activities Plaque.—Gamma Beta Chapter of Theta Tau Fraternity offers annually a plaque to be awarded to that member of the senior class who has the most outstanding record in activities in the School of Engineering during the entire period of his attendance.

Thomas F. Walsh Prize.—This prize of $150, established in 1901 by Thomas F. Walsh, is awarded annually to that student who submits the best essay in Irish history.

Washington Personnel Association Prize.—The Washington Personnel Association awards annually a certificate and $25 to an outstanding graduating senior in business administration who shows general excellence in studies, demonstrates superiority in one or more courses in personnel administration, and shows qualities of leadership or promise through extra-scholastic activities.

Alexander Wilbourne Weddell Prize.—This prize of $350, established in 1923, by Mrs. Virginia Chase Weddell, is awarded annually to a candidate for a degree who writes the best essay on the subject of "the promotion of peace among the nations of the world." The prize essays shall become the property of the University and shall not be printed or published without the written consent of the University. The University reserves the right to withhold the award if no essay attaining the required degree of excellence is submitted.

Zeta Tau Alpha Prize.—This prize of $25, established in 1957 by the Beta Alpha Chapter of the Zeta Tau Alpha Fraternity, is to be awarded to the outstanding senior woman student in sociology.

MILITARY AWARDS

Society of American Military Engineers Gold Medal.—This medal, offered by the Society of American Military Engineers, is awarded annually to selected Air Force ROTC cadets in the next-to-last year of their engineering course and in the last year of such course. Nominations are made jointly by the Professor of Air Science and the Dean of the School of Engineering, and final selection is made nationally by a board of three senior Air Force officers.

National Defense Transportation Association Award.—This medal, offered by the National Defense Transportation Association, is awarded to the outstanding senior graduate who qualifies for the Air Force Specialty of Air Transportation Officer or Surface Transportation Officer. The award is given in recognition of leadership qualities, academic standing, aptitude for military service, and for meritorious achievement in furthering the aims and objectives of the Association in the promotion of preparedness for national defense.

Armed Forces Communications and Electronics Association Gold Medal.—This medal, offered by the Armed Forces Communications and Electronics Association, is awarded annually to outstanding senior Air Force ROTC cadets majoring in Electrical Engineering who demonstrate outstanding qualities of military leadership and distinguish themselves either academically or by leadership in campus activities.

Air Force Association Silver ROTC Medal.—This medal, offered by the Air Force Association, is awarded annually to that cadet, who, after completion of Air Force ROTC summer training, is judged to be the outstanding cadet among those who have indicated their intention to apply for flying training upon graduation.

Reserve Officers' Association Medals.—Gold, silver, and bronze medals, offered by the Reserve Officers' Association of the District of Columbia, are awarded annually to those cadets enrolled in Air Science III, II, and I, respectively, who receive the highest grades for the current year in the leadership and academic phases of the Air Force ROTC course.

Chicago Tribune Gold ROTC Medal.—This medal, offered by *The Chicago Tribune,* is awarded each semester to that cadet enrolled in Air Science IV who has made an outstanding contribution to the effectiveness of the Air Force ROTC program by demonstrating the highest ideals of leadership and scholastic excellence.

Chicago Tribune Silver ROTC Medal.—This medal, offered by *The Chicago Tribune,* is awarded each semester to that cadet of the Air Force ROTC Basic Course who has demonstrated outstanding leadership potential and who has maintained excellent scholastic standing in the University.

Sons of the American Revolution ROTC Medal.—This medal, offered by the District of Columbia Society, Sons of the American Revolution, is awarded annually to that freshman cadet of each Air Force ROTC flight who demonstrates to the maximum degree traits and qualities of good citizenship and meets the prescribed requirements established by the donor.

Unit Leadership Trophy.—This silver trophy, offered by Walter G. Bryte, Jr., Colonel, USAF (Retired), first Professor of Air Science at this University, is awarded annually to the Air Force ROTC flight adjudged best in a competitive review and inspection. The Cadet Commander of this flight is presented a set of engraved Second Lieutenant's insignia.

The Colonial Cadet Rifle Trophy.—This trophy, offered by Master Sergeant Jerome Gleason, USAF, first coach of the Air Force ROTC Rifle Team at this University, is awarded to that cadet who is judged to be the outstanding member of the rifle team.

Arnold Air Society Scroll.—This scroll, offered by the Carl Spaatz Squadron of the Arnold Air Society, is awarded annually to the outstanding cadet completing the basic course with a cumulative average of *B* or better in Air Force ROTC courses.

Pershing Rifles Gold, Silver, and Bronze Achievement Medals.—These medals are awarded annually by the National Headquarters to those Air Force ROTC cadets who are Pershing Riflemen and who are judged to be outstanding examples of the ideals of the Pershing Rifles.

Republic Aviation Award.—An engraved identification bracelet, offered by the Republic Aviation Corporation, is awarded annually to that cadet enrolled in Air Science III who, in competition, makes the most effective verbal presentation on the Air Power theme.

The Convair Award.—A Convair miniature airplane, offered by the Consolidated Vultee Aircraft Corporation is awarded annually to that cadet enrolled in Air Science II who achieves the highest cumulative grade in the basic course and who applies for flight training.

Reserve Officers' Association Junior Memberships.—Five junior memberships, offered by the Reserve Officers' Association of the District of Columbia, are awarded annually to the five Air Force ROTC cadets who obtain the highest grades in Air Science III.

National Rifle Association Club Champion Medal.—This medal, offered by the National Rifle Association, is awarded to a sophomore, junior, or senior member of the Air Force ROTC Rifle team judged to be the outstanding member of the team based on marksmanship, participation in team matches, and contribution to the effectiveness of the team.

National Rifle Association Qualification Medals.—These medals, offered by the National Rifle Association, are awarded annually to members of the Air Force ROTC Rifle team qualifying as Expert, Sharpshooter, or Marksman in indoor rifle firing.

Air Force ROTC Rifle Team Awards.—Trophies, plaques, and medals are awarded annually to Air Force ROTC Rifle Teams through successful competition in the following:

The Air Force ROTC Liaison Area Championship Matches
The Army and Area Intercollegiate and Interscholastic Matches
The Secretary of the Air Force ROTC Rifle Match
The William Randolph Hearst National ROTC Rifle Matches.

FINANCIAL AID

STUDENT EMPLOYMENT

Graduate and undergraduate student assistantships are available in several departments of the University. Application should be made to the executive officer of the department of instruction concerned.

The Placement Office maintains a registry of positions available in many fields of work and refers qualified applicants for consideration.

LOAN FUNDS

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Inquiries should be directed to the Office of the Treasurer.

University Loan Fund.—The Trustees of The George Washington University have made available a fund for short-term loans to students.

Joseph H. Himes Loan Fund.—This fund contributed by Joseph H. Himes, in the amount of $11,410.96, is available for loans to students in the School of Medicine.

Home Economics Loan Fund.—This fund of $382.35, contributed by the D. C. Home Economics Association, is available for loans to senior girls majoring in Home Economics.

Kellogg Medical School Loan Fund.—The W. K. Kellogg Foundation in Battle Creek, Michigan, has established a fund of $19,988.03 for loans to students in the School of Medicine.

Law Association Loan Fund.—The George Washington Law Association has established a loan fund in the amount of $1,881.46 for loans to students in the Law School.

School of Medicine Loan Fund.—This fund of $9,513.75, contributed by medical students, is available for loans to students in the School of Medicine.

Pfizer Medical School Loan Fund.—The Chas. Pfizer & Co., Inc., has established a fund of $1,031.33 for loans to students in the School of Medicine.

Benjamin Schoenfeld Memorial Pharmacy Loan Fund.—This fund, established by the family and friends of Benjamin Schoenfeld, in the amount of $1,981.74, is available for loans to students studying pharmacy.

Henry Strong Educational Foundation.—The Henry Strong Educational Foundation, established at Chicago under the will of General Henry Strong, makes available a fund for loans to both men and women students under the age of twenty-five years.

Sutherland Medical School Loan Fund.—This fund, in the amount of $1,453.10 and established by Mrs. Rose L. Sutherland, is available for loans to students in the School of Medicine.

REGULATIONS

A student enrolled in the University is required to conform to the University regulations and to comply with the rules and regulations of the college, school, or division in which he is registered.

A student who withdraws or is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration in any unit of the University.

ATTENDANCE

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required. A student may be dropped from any course for undue absence.

A student who has been suspended, either for delinquency in payment of fees or for any other reason, is not permitted to attend classes during the period of suspension.

For further regulations regarding attendance, consult the announcements of the several colleges and schools.

SCHOLARSHIP REQUIREMENTS

A student who fails to maintain the scholarship requirements of the college, school, or division in which he is registered may be dismissed from the University.

Grades

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors.

Undergraduate.—The following grading system is used: *A*, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing. Whenever a grade has not been assigned, the symbol *Inc.* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *Inc.* indicates that a satisfactory explanation has been given the instructor for the student's failure to complete the required work of the course. An "incomplete" cannot be made up after the lapse of one calendar year except by permission of the Faculty. Courses from which a student has withdrawn by proper authorization will be indicated by the symbol *W*. A student may not repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned.

Graduate.—For graduate work, grades are indicated as "Excellent", "Satisfactory", "Unsatisfactory".

For the grading systems of the School of Medicine and the Law School, see the explanations in the announcements of those schools.

THE QUALITY-POINT INDEX

Undergraduate.—Scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on the complete collegiate record.

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered. Courses marked *W* or *Inc.* are not considered in determining the index, except that courses marked *Inc.* will be considered when a formal grade is recorded, or at the close of a calendar year, whichever occurs first. If an "incomplete" is not superseded by a proper grade within the allotted time, it is computed as zero quality points. Grades in courses taken at another institution are not considered in computing the quality-point index.

EXAMINATIONS

Examinations are scheduled in all courses at the end of each semester or at the completion of the course.

For further regulations regarding examinations, consult the announcements of the several colleges, schools, and divisions.

ACADEMIC DISHONESTY

Evidence of dishonesty on the part of any student will result in his suspension from the University upon the recommendation of the appropriate dean's council.

A student found guilty of dishonesty will be deprived of credit for *all courses* in the semester during which the dishonest act occurs.

A student may apply for readmission to the University after the expiration of not less than one calendar year from suspension. Action upon such application will be taken by the dean's council. The dean's council will recommend to the President that a student suspended twice for dishonesty not be readmitted.

WITHDRAWAL

Withdrawal from a course or from the University, ***without academic or financial penalty***, requires the permission of the dean of the college, school, or division in which the student is registered. Permission to withdraw from the University will not be granted a student who does not have a clear financial record. (See "Fees and Financial Regulations", pages 25–28.)

Withdrawal between October 31 and the end of the fall semester and between February 28 and the end of the spring semester is permitted only in exceptional cases.

All charges for courses dropped without the approval of the dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

A student may not withdraw from either the basic course or the advanced course of the Air Force ROTC without the approval of the President of the University

CHANGES IN PROGRAM OF STUDIES

Changes within a College, School or Division.—A student may not change or drop courses (see "Withdrawals", above) or change his status to that of auditor except with the approval of the dean of the college, school, or division in which he is registered.

Change from one section to another of the same course may be made with the approval of the dean and the department concerned.

Change from one major subject to another within the same college or school may be made with the approval of the dean. All requirements specified in the course of study to which the change is made must be satisfied.

Transfer within the University.—Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Except in cases of normal progression from the Junior College to Columbian College or the School of Government in a regular four-year program, application for transfer must be made to the Director of Admissions on the proper form provided by his office.

Students wishing to transfer from the Division of University Students or the Division of Special Students to a degree-granting college or school of the University should note that a maximum of 45 semester hours will be accepted in transfer.

In order to provide degree candidates with proper academic counsel and the benefits of integrated programs of study, the faculties of the various schools and colleges have established minimum residence requirements and regulations with regard to supervision of the work done in the student's major field. In addition, various special regulations regarding course sequence, selection of electives, and advisory approval of programs apply in particular curricula. Students transferring within the University are advised to study carefully the graduation requirements on pages 52–55 and to note that in all undergraduate divisions, except the Junior College and the College of General Studies, 30 semester hours, including *at least 12 semester hours* in the major field, must be completed *in residence* in the school or college from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly the requirements he must fulfill. (For residence requirements in the Junior College, see page 66. For information concerning the College of General Studies, see separate bulletin.)

CREDIT

Credit toward a degree is given only after regular registration for and satisfactory completion of the required work of classes in the University, or upon the granting of advanced standing in accordance with the regulations of the several colleges, schools, and divisions.

On request the Registrar will issue to the student a balance sheet showing the amount of work completed and the requirements, both quantitative and qualitative, remaining to be met for the degree.

In special instances, a person who has been admitted to the University may be registered, with the permission of the instructor, as an "auditor" in a class (no academic credit). An auditor is not required to take active part in the exercises or to take examinations.

Transcripts of Record

Official transcripts of student records will be forwarded on request to other institutions. Unofficial copies of records will be issued to the student on request. No charge is made for the first transcript; a fee of one dollar is charged for each one thereafter. No certificate of work done will be issued for a student who does not have a clear financial record.

Summer School Credit

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this University must first secure the written approval of the dean of his college or school. In no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

PHYSICAL EDUCATION REQUIREMENTS

Students in the Junior College and freshmen and sophomores in the School of Engineering are required to take Physical Education 1–2 and 11–12 unless they are registered for less than 9 semester hours or unless regular employment during the day makes it necessary to take all classes during the evening hours. Air Force ROTC cadets and a limited number of freshman and sophomore women may substitute Air Science 1–2 and 11–12 for the physical education requirement.

Any other exemptions will be granted only upon written petition which has been recommended by the physical education department concerned and approved by the dean of the college or school in which the student is registered.

Junior College students exempt from the physical education requirement will be required to substitute four hours of elective.

A student entering the University with advanced standing is not exempt from the physical education requirements unless he has satisfactorily met the requirements elsewhere.

The required medical and physical examinations, as specified by the departments of physical education, will be arranged at the time of registration.

GRADUATION REQUIREMENTS

To be recommended by the Faculty for graduation a student must have met the admission requirements of the college or school in which he is registered, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—Application for a degree should be filed in the Office of the Registrar at the time of registration for the last semester of the senior or final year.

Scholarship.—In all undergraduate divisions of the University the scholarship requirement for graduation is a quality-point index of at least 2.00.

The graduate student must meet the scholarship requirements for the particular degree for which he is registered.

Curriculum.—Minimum curriculum requirements for each degree are stated under the college or school offering work in preparation for the degree. (For Air Force ROTC graduation requirements see the Department of Air Science.)

Residence.—Unless otherwise specified, in all undergraduate divisions of the University, *a minimum of thirty semester hours, including at least twelve hours in the major field, must be completed in residence in the school or college from which the degree is sought.* This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the dean of the college or school concerned to pursue work elsewhere, the work of the senior or final year must be completed in residence.

The graduate student must meet the residence requirements for the particular degree for which he is registered.

With the permission of the dean of the college or school concerned, a student may be granted leave of absence; such student should, however, remain technically in residence by paying the residence fee for each semester he is absent. For the purpose of this regulation, the summer session will be disregarded.

Graduate Record Examination.—All candidates for Bachelor's degrees in Columbian College, the School of Engineering, the School of Government, and the College of General Studies are required to take two parts of the Graduate Record Examination in the University's institutional testing program. The examinations are conducted by the University twice a year: the Fall Testing Session (December 13, 1958) for seniors graduating in February, and the Spring Session (April 11, 1959) for those graduating in June or October. Dates of the examinations are announced in the *Schedule of Classes.*

Each senior required to take the Graduate Record Examination must register for it in the office of his dean when he registers for his final regular semester of study (excluding summer sessions). A $5 examination fee is payable at the time of registration.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service. By special permission seniors who expect to graduate in June may take the Graduate Record Examination at the previous Fall Testing Session, so as to have transcripts available early in the year when applying for admission to graduate schools.

See the announcements of the various schools and colleges in this CATALOGUE for a description of the tests required.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Comprehensive Problem, Thesis, or Dissertation.—A comprehensive problem, thesis, or dissertation submitted in partial satisfaction of requirements for the Master's degrees, the degree of Doctor of Education, the degree of Doctor of Juridical Science, the degree of Doctor of Business Administration, or the degree of Doctor of Philosophy must be presented in its final form to the dean of the college or school concerned not later than the date specified in the University calendar. Three copies of each are required, one typewritten original and two legible and complete carbon copies. Detailed instructions for the styling should be obtained from the appropriate dean.

Accepted comprehensive problems, theses, or dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the appropriate dean.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation *in absentia* is approved by the dean of his college or school.

HONORS

With distinction.—In all undergraduate divisions of the University the degree may be conferred "with distinction", at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution except that taken during the semester immediately preceding the granting of the degree. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

In the School of Medicine and the Law School, degrees may be conferred "with distinction", at the discretion of the Faculty, on those students who attain an average of *A* on all work taken for the degrees.

Special honors.—Special honors may be awarded by the Faculty to any member of the graduating class for outstanding achievement in the student's major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major department or field not later than the beginning of the senior year.

2. The student must meet such other conditions as may be set at the time his candidacy is approved.

3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution except that taken during the semester immediately preceding the granting of the degree.

4. To be eligible for honors a student must have completed at this institution at least one-half of the work required for the degree prior to the beginning of the semester immediately preceding the granting of the degree.

Military honors.—An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Cadet" if he (1) has completed Air Science III with an academic standing among the upper third of the students enrolled therein; (2) has an accumulative academic average of *B* or better; (3) possesses high moral character and definite aptitude for service in the Air Force; (4) has distinguished himself by demonstrated leadership through participation in recognized extracurricular activities and while in attendance at an Air Force ROTC Summer Training Unit. A "Distinguished Air Force ROTC Cadet" is authorized to wear a

"Distinguished" badge centered above the right breast pocket of the uniform. He may submit an application for a regular commission in the United States Air Force, which is given final consideration upon his designation as a "Distinguished Air Force ROTC Graduate".

An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Graduate" if he has (1) been designated a "Distinguished Air Force ROTC Cadet" and maintained the standards required of a "Distinguished Air Force ROTC Cadet" during the period between designation and graduation; (2) completed the Air Force ROTC Advanced Course; and (3) completed the requirements for a Bachelor's degree. A "Distinguished Air Force ROTC Graduate" will be presented with a certificate signed by the Commandant, Air Force ROTC, and, if he made application, will be considered for a regular commission in the United States Air Force.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

THE COLLEGES, SCHOOLS, AND DIVISIONS

THE JUNIOR COLLEGE

THE FACULTY AND STAFF OF INSTRUCTION[*]

George Martin Koehl, A.M., *Dean of the Junior College*
William Lewis Turner, Ph.D., *Assistant Dean of the Junior College*
Carr Bartleson Lavell, A.M., *Assistant Dean in the Junior College*

Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*
Warren Reed West, Ph.D., *Professor of Political Science*
Ruth Harriet Atwell, A.M., *Professor of Physical Education for Women*
Francis Edgar Johnston, Ph.D., *Professor of Mathematics*
Benjamin Douglass Van Evera, Ph.D., Sc.D., *Professor of Chemistry*
Merle Irving Protzman, Ph.D., *Professor of Romance Languages*
Ralph Dale Kennedy, Ph.D., *Professor of Accounting*
Florence Marie Mears, Ph.D., *Professor of Mathematics*
Wood Gray, Ph.D., *Professor of American History*
Thelma Hunt, Ph.D., M.D., *Professor of Psychology*
Ira Bowers Hansen, Ph.D., *Professor of Zoology*
Paul William Bowman, Ph.D., *Professor of Biology*
Arthur Edward Burns, Ph.D., *Professor of Economics*
John Withrow Brewer, Ph.D., *Professor of International Law*
Frances Kirkpatrick, A.M., *Professor of Home Economics*
William Henry Myers, A.M., *Professor of Physical Education for Men*
Harold Loran Geisert, Ph.D., *Professor of Sociology*
Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*
Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*
Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*
Ernest Sewall Shepard, A.M., *Professor of English Literature*
Fred Salisbury Tupper, Ph.D., *Professor of English Literature*
Charles Watson Bliven, M.S., *Professor of Pharmacy*
Alan Thomas Deibert, A.M., *Professor of Romance Languages*
Myron Law Koenig, Ph.D., *Professor of American History*
Calvin Darlington Linton, Ph.D., *Professor of English Literature*
[†]Charles Edward Gauss, Mus.B., Ph.D., *Elton Professor of Philosophy*
Donald Chenoweth Kline, B.Arch., M.F.A., *Professor of Art*
Helen Bennett Lawrence, A.M., *Professor of Physical Education for Women*
Charles William Cole, Ph.D., *Professor of American Literature*

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[*] The President of the University, the Dean of Faculties, the Dean and Assistant Deans of the College, the Registrar of the University, the Director of Admissions of the University, the Professors, Associate Professors, Assistant Professors, and Instructors constitute the Faculty.

[†] On sabbatical leave spring semester 1958–59.

George Martin Koehl, A.M., *Professor of Physics*
Lubin Poe Leggette, A.M., Ed.D., *Depew Professor of Speech*
Robert Dale Campbell, Ph.D., *Professor of Geography*
John Francis Latimer, Ph.D., *Professor of Classical Languages and Literatures*
Joseph Henry Krupa, M.S., Ed.D., *Professor of Physical Education for Men*
Roderic Hollett Davison, Ph.D., *Professor of European History*
Calvin Weir Pettit, Ph.D., *Professor of Speech*
Kathryn Mildred Towne, A.M., *Professor of Home Economics*
Elizabeth Burtner, A.M., *Professor of Physical Education for Women*
Robert Corbin Vincent, Ph.D., *Professor of Chemistry*
Edith Elizabeth Mortensen, Ph.D., *Professor of Zoology*
William Frederick Sager, Ph.D., *Professor of Chemistry*
Lewis Slack, Ph.D., *Professor of Physics*
George Elbert McSpadden, Ph.D., *Professor of Romance Languages*
Clyde Lorrain Cowan, Jr., Ph.D., *Professor of Physics*
Ross Pelton Schlabach, Jr., M.S., *Professor of Journalism*
Russell Bradford Stevens, Ph.D., *Professor of Botany*
Robert Hamilton Moore, Ph.D., *Professor of English Composition*
Reuben Esselstyn Wood, Ph.D., *Professor of Chemistry*
James Harold Coberly, Ph.D., *Professor of American Literature*
Gretchen Louisa Rogers, Ph.D., *Associate Professor of German*
Wolfram Karl Legner, Ph.D., *Associate Professor of German*
William Lewis Turner, Ph.D., *Associate Professor of English*
Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*
George Francis Henigan, Jr., Ph.M., *Associate Professor of Speech*
Edwin Lockwood Stevens, A.M., *Associate Professor of Speech*
Muriel Hope McClanahan, Ph.D., *Associate Professor of English Composition*
Nels David Nelson, Ph.D., *Associate Professor of Mathematics*
Sam Clark Munson, Ph.D., *Associate Professor of Biology*
Carr Bartleson Lavell, A.M., *Associate Professor of Sociology*
Raymond George Hanken, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*
Willard Edmund Caldwell, Ph.D., *Associate Professor of Psychology*
Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
Rafael Supervía, Doctor en derecho, *Associate Professor of Spanish*
James Willard Harkness, B.S., Ed.M., *Associate Professor of Chemistry*
Mildred Hollander Shott, A.M., *Associate Professor of Secretarial Studies*
Clifton Earl Olmstead, A.B., Th.D., *Associate Professor of Religion*
Ronald Bettes Thompson, Ph.D., *Associate Professor of European History*

Philip Henry Highfill, Jr., Ph.D., *Associate Professor of English Literature*

Vincent James DeAngelis, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*

John Gage Allee, Jr., Ph.D., *Associate Professor of English Philology*

*Theodore Peter Perros, Ph.D., *Associate Professor of Chemistry*

Geza Teleki, Ph.D., *Associate Professor of Geology*

Richard Catlin Haskett, Ph.D., *Associate Professor of American History*

Wilson Emerson Schmidt, Ph.D., *Associate Professor of Economics*

William Edward Schmidt, Ph.D., *Associate Professor of Chemistry*

David Gover White, B.Chem.Eng., Ph.D., *Associate Professor of Chemistry*

John Palmer Reesing, Jr., Ph.D., *Associate Professor of English Literature*

James Willis Robb, Ph.D., *Associate Professor of Romance Languages*

William Graham Clubb, Ph.D., *Associate Professor of French*

Howard Roland Ludden, A.M., *Assistant Professor of Political Science*

Robert Crumpton Willson, A.B., *Assistant Professor of Journalism*

Lee Sheward Bielski, A.M., *Assistant Professor of Speech*

Helen Bates Yakobson, B.S., *Assistant Professor of Russian*

Harland Walter Westermann, A.M., *Assistant Professor of Geography*

Alton Harold Desmond, Ph.D., *Assistant Professor of Zoology*

Richard Ernest Murphy, Ph.D., *Assistant Professor of Geography*

Eva Mayne Johnson, Ph.D., *Assistant Professor of Psychology*

James Cecil King, Ph.D., *Assistant Professor of German*

Carol Ruth St. Cyr, Ph.D., *Assistant Professor of Education*

Richard Walton Stephens, Ph.D., *Assistant Professor of Sociology*

Chester Hayden McCall, Jr., Ph.D., *Assistant Professor of Statistics*

Wilbur Earle Benson, M.B.A., *Assistant Professor of Accounting*

Laurence Pereira Leite, A.M., *Assistant Professor of Art*

Richard Harold Schlagel, Ph.D., *Assistant Professor of Philosophy*

Joseph Louis Metivier, Jr., A.M., *Assistant Professor of Romance Languages*

Robert Elemer Gajdusek,, A.M., *Assistant Professor of English*

John Lyle Prather, A.B., *Assistant Professor of Physics*

Loretta May Stallings, A.M., *Assistant Professor of Physical Education for Women*

Camille Jacob Craig, B.S. in P.E., A.M. in Ed., *Assistant Professor of Physical Education for Women*

Marcello Arturo Sabatino, D.M.L., *Assistant Professor of Romance Languages*

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* On sabbatical leave spring semester 1958–59.

Clarence William Schimelpfenig, Ph.D., *Assistant Professor of Chemistry*
John David Snide, Ph.D., *Assistant Professor of Psychology*
Elizabeth Truman Wright, A.M., *Instructor in English Composition*
Nancy Marie Patterson, Ph.D., *Instructor in English*
Gay Ellen Cheney, B.S. in Ed., *Instructor in Physical Education for Women*
Gennaro Anthony Santangelo, A.M., *Instructor in English*
Paul Harold Stacy, A.M., *Instructor in English*
Paul Curry Steele, A.B., M.F.A., *Instructor in English Composition*
James Gerard Sweeney, A.M., *Instructor in English*

COMMITTEES *

THE DEAN'S COUNCIL †

1959
Francis Edgar Johnston
John Gage Allee, Jr.

1960	1961
Philip Henry Highfill, Jr.	Ronald Bettes Thompson
James Cecil King	James Willis Robb

COMMITTEE ON ADMISSION AND ADVANCED STANDING

Carr Bartleson Lavell, *Chairman*

Edith Elizabeth Mortensen
William Graham Clubb
David Gover White
Chester Hayden McCall

COMMITTEE ON SCHOLARSHIP

William Lewis Turner, *Chairman*

Robert Corbin Vincent
Carr Bartleson Lavell
Harland Walter Westermann
Raymond George Hanken
William Graham Clubb
Eva Mayne Johnson

JUNIOR COLLEGE ADVISORY COMMITTEE

Dean of the Junior College, *Chairman*

Ruth Harriet Atwell
Charles Watson Bliven
Robert Corbin Vincent
Carr Bartleson Lavell
James Cecil King
Frances Kirkpatrick
Joseph Henry Krupa
William Lewis Turner
Mildred Hollander Shott
Carol Ruth St. Cyr

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* The Dean of the Junior College is a member ex officio of all committees.
† Elected by the Faculty.

GENERAL INFORMATION

INTRODUCTORY

The Junior College, which administers the first two years of the standard four-year college program in the liberal arts and sciences, was established in 1930, as a part of the academic reorganization of the University. Prior to 1930, the four-year program had been administered by Columbian College since its organization in 1821.

The Junior College curricula continue the studies of a general cultural nature begun in the secondary schools, and lay a foundation for the more specialized work which is to follow. Emphasis is accordingly laid (1) upon the social, cultural, biological, and physical background of civilization and (2) upon the discipline necessary to the effective prosecution of more advanced work.

The Junior College also provides the preprofessional work required for admission to the schools of Pharmacy, Education, and Government, and the first two years of the preprofessional work required by the schools of Medicine and Law.

In addition it provides the following two-year curricula in vocational training: Accounting, Home Economics, Medical Technology—Basic Course, Physical Sciences, and Secretarial Studies.

Advisory System

In order that students may have opportunities for assistance in planning their courses and also for obtaining personal, educational, and vocational advice in every phase of their academic work during the first two years, a number of members of the Faculty serve as advisers to Junior College students.

Members of the Faculty, selected for their knowledge of Junior College requirements and student programs, advise students in making up their programs of study for each semester. A separate staff of experienced advisers under the chairmanship of the Dean assists those students who find it difficult to make adjustments to college life because of scholastic or other reasons. Students who are "warned" or who are on probation may be required to consult these advisers at regular intervals. Students are encouraged to consult any member of the Advisory Staff or their instructors about college problems at any time.

Copies of notices of "warning" or probation will be sent to the parents or guardians of students on request, and the Dean and members of the Advisory Staff are available for consultation with parents or guardians concerning student problems.

REGULATIONS

Students in the Junior College are subject to, and are expected to familiarize themselves with, the regulations regarding ADMISSION, REGISTRATION, FEES AND FINANCES *stated on pages 13–28, and the University regulations stated on pages 48–55.*

SCHOLASTIC-APTITUDE TESTS

Students admitted to the Junior College may be required to take the scholastic-aptitude tests of the University.

REQUIRED PLACEMENT EXAMINATIONS

English.—Special placement examinations, required of all entering freshmen, will be conducted by the English Department. Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A.

Foreign Languages.—A standardized placement examination will be required of all entering students who wish to continue in college the language begun in high school (French, German, or Spanish). Upon completion of the examination assignment will be made to the appropriate course with credit to be assigned on the usual basis. This does not apply to students whose previous experience in a given language is equivalent to two college years.

The Use of Correct English.—The use of correct English, oral or written, is required not only in English but also in all other courses (see page 84).

FIRST AND SECOND-GROUP COURSES

A Junior College student may not take second-group courses (courses numbered 101–200) without the written permission of the instructor and of the Dean of the Junior College. A student will not be permitted to postpone a first-group course required under the curriculum for which he is registered in order to take a second-group course for elective credit. The principle that first-group courses must be taken in the Junior College years, and advanced courses in Columbian College and the professional schools, will be rigidly adhered to in approving student programs. No student on probation is permitted to take second-group courses except by the express permission of the Committee on Scholarship.

AMOUNT OF WORK

Sixteen or 17 semester hours constitute a normal academic load. A student not on probation may be permitted by the Dean to take 18 semester hours.

A student whose quality-point index is 3.50 may, with the permission of the Dean, take 19 or 20 semester hours. No student may take more than 20 hours, except with the permission of the Committee on Scholarship.

For an employed student working 20 or more hours a week, 10 semester hours constitute a normal academic load. An employed student not on probation may be permitted by the Dean to take 11 hours. An employed student whose quality-point index is 3.50 may be permitted by the Dean to take 13 or 14 hours.

A student previously unemployed who accepts employment subsequent to registration or at any time during a semester is required to report that fact immediately to the Dean and to bring his program within the limitations set by the Faculty upon the amount of work to be carried by an employed student.

ATTENDANCE

The student is held responsible to the instructor in charge of the course for which he is registered for all the work of the course, and all absences must be excused before provision will be made for him to make up the work missed.

With the exceptions noted below, occasional absences from a course not to exceed in number the semester hours of credit for the course, will be automatically excused. (If a course has distinct divisions such as lectures, laboratories, recitations, etc., these excuses apply pro rata to such separate divisions.) In the application of this rule absences immediately preceding or following holiday periods are to be counted double.

A student on probation is allowed no automatic excuses.

Excuses for absences from two or more consecutive class periods, and for absences from examinations which have been announced in advance, can be obtained only by making written application to the instructor in charge of the course.

A student whose absences from any class, whether excused or unexcused, are in excess of one-fourth of the total number of class periods will receive the grade of *F* for the course, except by special ruling of the Dean on recommendation of the instructor in the course.

CLASSIFICATION OF STUDENTS

A student who has satisfactorily completed at least 32 semester hours of work, including 18 hours in his curriculum requirements, is classed as a *sophomore*.

THE DEGREES

Upon the satisfactory completion of the requirements of the Junior College, the degree of Associate in Arts or Associate in Science is conferred.

REQUIREMENTS FOR THE DEGREES

Residence

The last 15 hours of work required for the Associate's degrees must be taken in residence in the Junior College.

Scholarship

The system of grading and of computing scholarship is described in detail on pages 48 and 49.

In order to receive the degree of Associate in Arts or Associate in Science a student must have a quality-point index of at least 2.00.

Honor Roll.—The name of every student who has a quality-point index of 3.50 or higher on the basis of his complete record at this University will be placed on the honor roll and published. No consideration is given to those who have completed a total of less than 15 semester hours. A place on the honor roll does not necessarily mean that the student will receive honors upon graduation.

Dean's List.—The name of every student who makes a quality-point index of 3.50 or higher on a minimum of 15 semester hours of work taken in any one semester will be placed on the Dean's List for that semester.

Probation.—A student must maintain a quality-point index of at least 2.00 to be in good academic standing.

A student who has attempted 12 or more semester hours of work and whose quality-point index is between 1.50 and 2.00 will be placed on probation. This probation extends over the period in which the student attempts 12 semester hours of work. The student whose quality-point index is still below 2.00, at the end of this probationary period, will be suspended. The student who has earned an average of above 2.00 for work undertaken during the probationary period may be continued on probation by the Committee on Scholarship.

Suspension.—A student whose quality-point index is below 1.50 is subject to suspension by the Committee on Scholarship.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. On application for readmission the student must submit specific evidence to the Committee on Scholarship that he is better qualified to pursue college work.

A student suspended twice for poor scholarship will not be readmitted.

Mid-semester Warning.—At the end of the seventh week of each semester, instructors file in the Office of the Junior College the names of those students who are doing work of *D* grade or lower. A notice of Warning is sent to the student and a copy filed with the appropriate adviser. A "warning" constitutes notice to the student that he must consult his instructor and adviser at the earliest opportunity.

CURRICULUM REQUIREMENTS

The satisfactory completion of 64 semester hours of college work is required, as outlined in one of the Junior College curricula described below.

Except for students intending to apply for the combined degrees of Bachelor of Arts and Doctor of Medicine, not more than 12 hours of professional courses may be included in the 124 hours required for the Bachelor's degrees in Columbian College. Junior College students electing professional courses under this rule must obtain the approval of the Dean of the Junior College before registering for these courses.

Physical Education Requirements.—Physical Education or Air Force ROTC Leadership Laboratory is required of all students in the freshman and sophomore years. (See "Physical Education Requirements", pages 51 and 52).

Foreign Language Requirements.—In curricula requiring foreign languages a student must complete satisfactorily the equivalent of two years of college work in a single foreign language.

A student offering for admission four acceptable high school units of a single foreign language, or the equivalent, is not required to take any foreign language.

A student who offers less than four units and wishes to meet the Junior College requirement by continuing in the same language must take the language placement test (see page 64).

In general, one year of high school language is considered to be equivalent to one semester of college language.

In some instances foreign languages are required or recommended as preparation for advanced work in Columbian College and the professional schools. The student should consult his adviser as to these requirements, so that appropriate foreign languages may be included, when necessary, in his Junior College program.

English Requirements.—Entering students registered in the pre-Columbian College curricula must follow the sequence of English 1, both halves of one of the introductory literature courses, and English 4. This does not apply to students transferring to these curricula or students registering in the preprofessional or vocational curricula.

JUNIOR COLLEGE CURRICULA

I. CURRICULA FOR ADMISSION TO COLUMBIAN COLLEGE AND THE PROFESSIONAL SCHOOLS

Each of the following curricula comprises the first two years of a standard four-year college course and prepares the student for upper division work.

All curricula in this group lead to the degree of Associate in Arts.

A. COLUMBIAN COLLEGE:

1. ARTS AND LETTERS

The following two-year curriculum prepares for the Bachelor of Arts program in Columbian College:

		Semester Hours
English Composition and Literature	English 1; 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, or Spanish 51–52; English 4	12
Foreign Language	See page 67 for foreign language requirement	12
Physical Education	See pages 51–52 for statement of requirement	4
Science	Biology 1–2, Botany 1, 2, Chemistry 3–4, 11–12, Geology 1–2, Physics 5, 7 (6, 7), (5, 6), or Zoology 1–2	6–8
Social Studies	Economics 1–2, Geography 51, 52, History 39–40, 71–72, Political Science 9–10 (1 and 9, 1 and 10), or Sociology 1–2	6
Elective*		22 or 24
Total		64

2. SCIENCE

The following two-year curriculum prepares for the Bachelor of Science curriculum in Columbian College:

		Semester Hours
English Composition and Literature	English 1; 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, or Spanish 51–52; English 4	12
Foreign Language	French or German or nonscience elective Note.—A reading knowledge of French or German is required. This may be satisfied by French 4 or German 4 or by special examination.	12

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* It is suggested that electives include one of the following courses: Art 31–32, 71–72; Philosophy 51–52, 111–12; Religion 9–10, 59–60.

The student should obtain the advice of his major department as to proper prerequisite and collateral courses for the intended major.

Credit is not given for courses elected in Secretarial Studies; credit may be given for a limited number of courses elected in Physical Education, with the approval of the Dean.

Mathematics	Mathematics 3, 6, or electives Note.—The Mathematics 3 requirement may be satisfied by offering two years of high school algebra acceptable for admission; the Mathematics 6 requirement may be satisfied by offering one-half year of high school trigonometry acceptable for admission.	6
Physical Education	See pages 51–52 for statement of requirement	4
Science	(a) Biology 1–2, Botany 1, 2, Zoology 1–2 (b) Chemistry 11–12, Geology 1–2, Physics 5, 7 (6, 7) (5, 6) (In satisfying this requirement, at least one year-course must be taken in each group (a) and (b).)	18 to 22
Social Studies	Economics 1–2, Geography 51, 52, History 39–40, 71–72, Political Science 9–10, or Sociology 1–2	6
Elective[*]		2 to 6
	Total	64

3. PREMEDICAL

The first 60 semester hours of the 90 required for admission to the School of Medicine are undertaken in the Junior College. Premedical students may follow either the Arts and Letters curriculum or the Science curriculum listed above. However, they should note the specific requirements for admission to the School of Medicine. (*See* Admission, page 17.) Each premedical program must be approved by the Premedical Adviser.

B. SCHOOL OF PHARMACY:

The following two-year curriculum prepares for the Bachelor of Science in Pharmacy curriculum in the School of Pharmacy.

Students planning to complete the requirements for the degree of Bachelor of Science in Pharmacy (see pages 152–55) in four years must complete 9 hours of approved elective work in addition to the Junior College curriculum listed below. Some of this work may be completed during the fall and spring semesters; the remainder may be completed during a summer session.

		Semester Hours
English	English 1, 2	6
Science	Botany 1 or 2, Chemistry 11–12, Physics 5–6, Zoology 1 (Freshman year)	21
	Chemistry 151–52 (Sophomore year)	8

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[*] It is suggested that electives include one of the following courses: Art 31–32, 71–72; Philosophy 51–52, 111–12; Religion 9–10, 59–60.

The student should obtain the advice of his major department as to proper prerequisite and collateral courses for the intended major.

Credit is not given for courses elected in Secretarial Studies; credit may be given for a limited number of courses elected in Physical Education, with the approval of the Dean.

Social Studies	Economics 1	3
Professional Coures	Pharmacy 1–2 (Freshman year)	3
	Pharmacy 21–22, 23, 25 (Sophomore year)	14
Physical Education	See pages 51–52 for statement of requirement	4
Elective*		5
	Total	64

C. SCHOOL OF EDUCATION:

1. EDUCATION

The following two-year curriculum prepares for the Bachelor of Arts in Education curriculum in the School of Education:

		Semester Hours
English	English 1, 2	6
	English 51–52, 71–72, or 91–92	6
Foreign Language	(French, German, Latin, Russian, or Spanish.) See page 67 for foreign language requirement	12
Physical Education	See pages 51–52 for statement of requirement	4
Science and Mathematics	Two semesters to supplement senior high school courses, selected from: Biology 1–2; Botany 1, 2; Chemistry 3–4, 11–12; Physics 5 and 6 or 7; Zoology 1–2; or Mathematics 3 and 6 or 6 and 12	6 or 8
Social Studies	History 71–72	6
	Economics 1–2; Geography 51, 52; History 39–40; Political Science 9–10; Religion 59–60; or Sociology 1–2. (Those offering for admission two or more acceptable senior high school units in the Social Studies may be exempted from this requirement)	6
Other Courses	Psychology 1	3
	Psychology 22 or 29†	3
	Speech 1 or 11	3
	Statistics 53	3
Elective		4 to 6
	Total	64

2. HOME ECONOMICS

The following two-year curriculum prepares for the Bachelor of Science in Home Economics curriculum in the School of Education:

		Semester Hours
English	English 1, 2	6
	English 51–52, 71–72, Speech 1, 2 (1, 11)	6
Physical Education	See pages 51–52 for statement of requirement	4

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* Credit is not given for courses elected in Physical Education or Secretarial Studies.

† Psychology 29 is required for students preparing to teach in elementary schools.

Psychology	Psychology 1, 29	6
Science	Biology 1–2, Chemistry 11–12, Physics 5, 6, 7	6–8
Social Studies*	Economics, History, Political Science, or Sociology	12
Major Prerequisites	Home Economics 1, 22 (Freshman year)	6
	Home Economics 51, 62 (Sophomore year)	6
Academic Electives	(Freshman year)	6
	(Sophomore year)	4–6
	Total	64

3. PHYSICAL EDUCATION FOR MEN

The following two-year curriculum prepares for the Bachelor of Science in Physical Education curriculum in the School of Education:

		Semester Hours
English	English 1, 2	6
Physical Education	1–2, 11–12	4
Science	Biology 1–2 or Zoology 1–2 (Freshman year)	6 or 8
Social Studies	History 39–40, 71–72; Political Science 9–10; or Sociology 1–2 (Freshman year)	6
	Economics, History, or Political Science (Sophomore year)	6
Major Prerequisites	Physical Education 43–44, 47; Speech 1 or 11 (Freshman year)	9
	Physical Education 45–46, 49, 50, 58; Psychology 1, 22 (Sophomore year)	18
Elective		7–9
	Total	64

4. PHYSICAL EDUCATION FOR WOMEN

The following two-year curriculum prepares for the Bachelor of Science in Physical Education curriculum in the School of Education:

		Semester Hours
English	English 1, 2	6
	English 51–52, 71–72, or 91–92	6
Physical Education	1–2, 11–12	4
Science	Biology 1–2 or Zoology 1–2	6 or 8
Social Studies	History 39–40, 71–72, Political Science 9–10, or Sociology 1–2	6
Major Prerequisites	Physical Education 43–44 (Freshman year)	4
	Physical Education 49, 50, 51–52; Psychology 1, 22 (Sophomore year)	16
Academic Electives	(Each year)	6 or 8
	Total	64

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* Courses are to be selected with the approval of the adviser in the Department of Home Economics.

D. SCHOOL OF GOVERNMENT:

1. ACCOUNTING AND BUSINESS ADMINISTRATION

The following two-year curriculum prepares for the Bachelor of Arts in Government curricula in Accounting and in Business Administration in the School of Government:

		Semester Hours
Accounting	Accounting 1–2	6
English	English 1, 2, 11	9
Foreign Language	See page 67 for foreign language requirement	12
Physical Education	See pages 51–52 for statement of requirement	4
Social Studies	Economics 1–2; Political Science 9–10	12
Speech	Speech 1	3
Statistics	Statistics 51, 52	6
Elective*	(Students interested in Foreign Commerce include Geography 51)	12
	Total	64

2. FOREIGN AFFAIRS AND PUBLIC AFFAIRS

The following two-year curriculum prepares for the Bachelor of Arts in Government curriculum in Foreign Affairs and Public Affairs in the School of Government:

		Semester Hours
English	English 1, 2	6
Foreign Language	See page 67 for foreign language requirement	12
Mathematics, Science	Biology, Botany, Chemistry, Geology, Mathematics, Physics, Statistics, or Zoology	6 to 8
Physical Education	See pages 51–52 for statement of requirement	4
Social Studies	Economics 1–2; History 39–40, 71–72; Political Science 9–10	24
Elective*	(To satisfy minimum required credits. Students interested in Foreign Service include Geography 51)	10 to 12
	Total	64

3. BUSINESS AND ECONOMIC STATISTICS

The following two-year curriculum prepares for the Bachelor of Arts in Government curriculum in Business and Economic Statistics in the School of Government:

		Semester Hours
Accounting	Accounting 1–2	6
English	English 1, 2	6
Foreign Language	See page 67 for foreign language requirement	12
Mathematics	Mathematics 20 and prerequisites	3 to 12

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* Credit is not given for courses elected in Physical Education or Secretarial Studies.

Physical Education	See pages 51–52 for statement of requirement	4
Social Studies	Economics 1–2; Philosophy 51–52	12
Statistics	Statistics 51 or 91–92	3 or 6
Elective*		6 to 18
	Total	64

II. VOCATIONAL CURRICULA

In addition to the above curricula, all of which prepare for admission to upper division colleges and schools, the Junior College offers the following two-year terminal courses.

The curricula in Accounting and Secretarial Studies lead to the degree of Associate in Arts. The curricula in Home Economics, Medical Technology—Basic Course, and Physical Sciences lead to the degree of Associate in Science.

1. ACCOUNTING

The required work may be completed in two calendar years on a full-time basis or in three calendar years on a part-time basis, with the approval of the adviser.

		Semester Hours
Accounting	Accounting 1–2, 101, 111, 121–22, 161, 171, 181, 191, 193	33
Business Administration	Business Administration 131, 161, 162	9
Economics	Economics 1–2	6
English	English 1, 2	6
Physical Education	See pages 51–52 for statement of requirement	4
Elective	To be selected with the approval of the adviser	6
	Total	64

2. HOME ECONOMICS

		Semester Hours
English	English 1, 2	6
	English 51–52, 71–72, 91–92, Speech 1, 2 (1, 11)	6
	English 11 or Secretarial Studies 51	3
Home Economics	Home Economics 1, 22, 51, 62	12
Physical Education	See pages 51–52 for statement of requirement	4
Psychology	Psychology 1	3
Secretarial Studies	Secretarial Studies 1, 2	6
Home Economics Elective†		6–12
Elective†		6–12
	Total	64

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* Credit is not given for courses elected in Physical Education or Secretarial Studies.

† Courses are to be selected with the approval of the adviser in the Department of Home Economics.

3. MEDICAL TECHNOLOGY—BASIC COURSE

This course is in preparation for further training toward certification as medical technologist. See pages 115–16 for information concerning the Medical Technologist Course.

		Semester Hours
English	English 1, 2	6
Foreign Language	See page 67 for foreign language requirement	12
Literature or Social Studies	English 51–52, 71–72, 91–92, Classical Languages 71–72, French 51–52, German 51–52, or Spanish 51–52. Economics 1–2, Geography 51, 52, History 39–40, 71–72, Political Science 9–10, or Sociology 1–2	6
Physical Education	See pages 51–52 for statement of requirement	4
Science	Chemistry 11, 12, 21, 22	16
	Zoology 1–2	8
	Bacteriology 112, Zoology 41–42, 138, 145, 156	6
Elective	(Mathematics 3, 6, Physics 5 are recommended)	6
	Total	64

4. PHYSICAL SCIENCES

This curriculum is designed for part-time students who do not wish to extend their collegiate education beyond 64 semester hours of work. All other students interested in the study of physical science should follow the pre-Columbian College Science curriculum.

		Semester Hours
Chemistry	Chemistry 11, 12, 21	12
English	English 1, 2, 11	9
Mathematics	Mathematics 3, 6, 12, 19, 20	15
Mechanical Engineering	Mechanical Engineering 3–4	4
Physical Education	See pages 51–52 for statement of requirement	4
Physics	Physics 5, 6, 7, 8, 55	15
Elective	(Speech 1, Economics 1–2 suggested)	1–14
	Total	64

5. SECRETARIAL STUDIES

		Semester Hours
English	English 1, 2	6
	English 51–52, 71–72, 91–92	6
Physical Education	See pages 51–52 for statement of requirement	4
Secretarial Studies*	Secretarial Studies 1, 2, 11, 12, 15, 16, 51, 54	24
Social Studies	Economics 1–2, Geography 51, 52, History 39–40, 71–72, Political Science 9–10, or Sociology 1–2	6

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* Qualified students, upon the approval of the adviser or the satisfactory completion of a placement test, may waive Secretarial Studies 1, 11, and 12. Other courses, approved by the adviser, will be substituted.

General	Accounting 1	3
	Speech 11	3
Elective	(To be selected with the approval of the adviser)	12
	Total	64

Examinations for Waiving Curriculum Requirements *

A student desiring to omit a required course may take such examination as the department prescribes, and, on passing satisfactorily, he may be relieved of the curriculum requirements in that subject and may qualify for registration in an advanced course. Passing this examination does not entitle the student to any hours of credit toward the degree. A student desiring to take such examinations should make written request of the Dean and pay the required fee at the Office of the Treasurer before the date of the examination specified in the University calendar.

HONORS

The degree of Associate in Arts or Associate in Science may be conferred "with distinction" upon the student who has a quality-point index of 3.50 or higher, provided that student has been in residence at the University for 30 hours, 15 of which must have been taken in the Junior College at the time the index is calculated.

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* This provision does not apply to the premedical student, all of whose required premedical work must be taken in a recognized college of arts and sciences.

COLUMBIAN COLLEGE

THE FACULTY AND STAFF OF INSTRUCTION[*]

Calvin Darlington Linton, Ph.D., *Dean of Columbian College*

Joseph Hyram Roe, Ph.D., *Professor of Biochemistry*
Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*
Warren Reed West, Ph.D., *Professor of Political Science*
Francis Edgar Johnston, Ph.D., *Professor of Mathematics*
Benjamin Douglass Van Evera, Ph.D., Sc.D., *Professor of Chemistry*
Mitchell Dreese, Ph.D., *Professor of Educational Psychology*
Merle Irving Protzman, Ph.D., *Professor of Romance Languages*
Florence Marie Mears, Ph.D., *Professor of Mathematics*
Wood Gray, Ph.D., *Professor of American History*
Thelma Hunt, Ph.D., M.D., *Professor of Psychology*
Ira Bowers Hansen, Ph.D., *Professor of Zoology*
Paul William Bowman, Ph.D., *Professor of Biology*
Arthur Edward Burns, Ph.D., *Professor of Economics*
John Withrow Brewer, Ph.D., *Professor of International Law*
Paul Kenneth Smith, Ph.D., *Professor of Pharmacology*
Harold Loran Geisert, Ph.D., *Professor of Sociology*
Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*
Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*
Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*
Ernest Sewall Shepard, A.M., *Professor of English Literature*
Fred Salisbury Tupper, Ph.D., *Professor of English Literature*
Alan Thomas Deibert, A.M., *Professor of Romance Languages*
Chester Elwood Leese, Ph.D., *Fry Professor of Physiology*
[†]Donald Stevenson Watson, Ph.D., *Professor of Economics*
Myron Law Koenig, Ph.D., *Professor of American History*
Calvin Darlington Linton, Ph.D., *Professor of English Literature*
Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*
[†]Charles Edward Gauss, Mus.B., Ph.D., *Elton Professor of Philosophy*
Ira Rockwood Telford, Ph.D., *Professor of Anatomy*
Donald Chenoweth Kline, B.Arch., M.F.A., *Professor of Art*
Charles William Cole, Ph.D., *Professor of American Literature*

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[*] The President of the University, the Dean of Faculties, the Dean of the College, the Registrar of the University, the Director of Admissions of the University, the Professors, Associate Professors, and Assistant Professors constitute the Faculty.

[†] On sabbatical leave spring semester 1958–59.

Everett Herschel Johnson, Ph.D., *Professor of Statistics*
George Martin Koehl, A.M., *Professor of Physics*
Lubin Poe Leggette, A.M., Ed.D., *Depew Professor of Speech*
Joseph Richard Sizoo, A.M., S.T.D., D.D., Litt.D., *Milbank Professor of Religion*
Robert Dale Campbell, Ph.D., *Professor of Geography*
John Francis Latimer, Ph.D., *Professor of Classical Languages and Literatures*
Roderic Hollett Davison, Ph.D., *Professor of European History*
Calvin Weir Pettit, Ph.D., *Professor of Speech*
*Wolfgang Herbert Kraus, Dr.Jur., S.J.D., *Professor of Political Science*
Robert Corbin Vincent, Ph.D., *Professor of Chemistry*
Edith Elizabeth Mortensen, Ph.D., *Professor of Zoology*
William Frederick Sager, Ph.D., *Professor of Chemistry*
Lewis Slack, Ph.D., *Professor of Physics*
Charles Adrian Michael Hogben, M.D., Ph.D., *Professor of Physiology*
George Elbert McSpadden, Ph.D., *Professor of Romance Languages*
Clyde Lorrain Cowan, Jr., Ph.D., *Professor of Physics*
Ross Pelton Schlabach, Jr., M.S., *Professor of Journalism*
Russell Bradford Stevens, Ph.D., *Professor of Botany*
Robert Hamilton Moore, Ph.D., *Professor of English Composition*
Reuben Esselstyn Wood, Ph.D., *Professor of Chemistry*
James Harold Coberly, Ph.D., *Professor of American Literature*
†Edward Campion Acheson, Ph.D., *Associate Professor of Finance*
Gretchen Louisa Rogers, Ph.D., *Associate Professor of German*
Wolfram Karl Legner, Ph.D., *Associate Professor of German*
Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*
George Francis Henigan, Jr., Ph.M., *Associate Professor of Speech*
Edwin Lockwood Stevens, A.M., *Associate Professor of Speech*
Nels David Nelson, Ph.D., *Associate Professor of Mathematics*
Sam Clark Munson, Ph.D., *Associate Professor of Biology*
Carr Bartleson Lavell, A.M., *Associate Professor of Sociology*
Willard Edmund Caldwell, Ph.D., *Associate Professor of Psychology*
*James Norman Mosél, A.M., *Associate Professor of Psychology*
Rafael Supervía, Doctor en derecho, *Associate Professor of Spanish*
William Columbus Davis, Ph.D., *Associate Professor of Latin American History*
Clifton Earl Olmstead, A.B., Th.D., *Associate Professor of Religion*
Ronald Bettes Thompson, Ph.D., *Associate Professor of European History*
Philip Henry Highfill, Jr., Ph.D., *Associate Professor of English Literature*

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* On sabbatical leave 1958–59.
† On leave of absence 1958–59.

John Gage Allee, Jr., Ph.D., *Associate Professor of English Philology*
*Theodore Peter Perros, Ph.D., *Associate Professor of Chemistry*
John Whitefield Kendrick, Ph.D., *Associate Professor of Economics*
Geza Teleki, Ph.D., *Associate Professor of Geology*
Richard Catlin Haskett, Ph.D., *Associate Professor of American History*
Wilson Emerson Schmidt, Ph.D., *Associate Professor of Economics*
William Edward Schmidt, Ph.D., *Associate Professor of Chemistry*
John Palmer Reesing, Jr., Ph.D., *Associate Professor of English Literature*
James Willis Robb, Ph.D., *Associate Professor of Romance Languages*
William Graham Clubb, Ph.D., *Associate Professor of French*
Howard Rowland Ludden, A.M., *Assistant Professor of Political Science*
Robert Crumpton Willson, A.B., *Assistant Professor of Journalism*
Helen Bates Yakobson, B.S., *Assistant Professor of Russian*
Harland Walter Westermann, A.M., *Assistant Professor of Geography*
Alton Harold Desmond, Ph.D., *Assistant Professor of Zoology*
Richard Ernest Murphy, Ph.D., *Assistant Professor of Geography*
Hugh Linus LeBlanc, A.M., *Assistant Professor of Political Science*
John William Skinner, Ph.D., *Assistant Professor of Economics*
Eva Mayne Johnson, Ph.D., *Assistant Professor of Psychology*
James Cecil King, Ph.D., *Assistant Professor of German*
Richard Walton Stephens, Ph.D., *Assistant Professor of Sociology*
Chester Hayden McCall, Ph.D., *Assistant Professor of Statistics*
Laurence Pereira Leite, A.M., *Assistant Professor of Art*
Richard Harold Schlagel, Ph.D., *Assistant Professor of Philosophy*
Rudolph Hugh, Ph.D., *Assistant Professor of Bacteriology*

COMMITTEES†

The Dean's Council‡

1959
Myron Law Koenig
Lewis Slack

1960
Harland Walter Westermann
James Cecil King

1961
Roderic Hollett Davison
Fred Salisbury Tupper

Committee on Admission and Advanced Standing

Calvin Darlington Linton, *Chairman*
Edith Elizabeth Mortensen, *Secretary*
Alan Thomas Deibert
Charles William Cole
William Frederick Sager

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* On sabbatical leave spring semester 1958–59.
† The Dean of Columbian College is a member ex officio of all committees.
‡ Elected by the Faculty.

Committee on the Use of Correct English

	Robert Hamilton Moore, *Chairman*
George Francis Henigan, Jr.	Muriel Hope McClanahan
John Gage Allee	Robert Crumpton Willson

Committee on Scholarship

	Florence Marie Mears, *Chairman*
Samuel Nathaniel Wrenn	Howard Maxwell Merriman
John Palmer Reesing, Jr.	William Graham Clubb

Committee on Studies

	The Dean of the College, *Chairman*
Fred Salisbury Tupper	Edith Elizabeth Mortensen
Richard Catlin Haskett	William Edward Schmidt

GENERAL INFORMATION

INTRODUCTORY

Columbian College was founded in 1821. James Monroe, then President of the United States, aided in obtaining the charter from Congress which established "The Columbian College in the District of Columbia" for the "sole and exclusive purpose of educating youth in the English, learned and foreign languages, the liberal arts, sciences and literature", with full power to confer all degrees "usually granted and conferred in colleges".

In 1930, when the Junior College was established, the name "Columbian College" was bestowed upon the senior college of liberal arts.

The Columbian College Program

Columbian College is that branch of the University which grants the Bachelor's and Master's degrees in the liberal arts. Its purpose is to enable the student to develop harmoniously both his particular abilities and his general awareness as a human being. It demands of the student a thorough acquaintance with one major area of learning and at the same time an understanding of how that field of specialization fits into the larger context of the scientific, social, and moral problems which confront modern man. It stresses not merely expertness but that broadly enlightened expertness which encourages its graduates to grow through the years in ability and wisdom.

The program is a contemporary application of the historic liberal arts tradition. A particular vitality and meaning are imparted to it by the fact that The George Washington University is situated in the cosmopolitan capital city of a nation to which, increasingly, the world looks for leadership. Here, uniquely, the liberal arts tradition is put to the test of contact with reality.

REGULATIONS

Students in Columbian College are subject to, and are expected to familiarize themselves with, the regulations regarding ADMISSION, REGISTRATION, FEES AND FINANCES *stated on pages 13–28, and the University regulations stated on pages 48–55.*

PREREQUISITES

It is assumed that a student entering Columbian College has met the requirements of the Junior College under the *Arts and Letters* curriculum or the *Science* curriculum. (See the Junior College section of the CATALOGUE.) Following is a summary of these prerequisites:

The *Arts and Letters* curriculum: (1) English composition (6 semester hours) and an additional year course (6 semester hours) in English, American, European, Classical, or any other foreign literature. (2) Two college years (at least 12 semester hours) of a single foreign language or the equivalent (see foreign-language requirement, page 67), are required. A transfer student who has had foreign-language courses in another institution meeting 4 or 5 times a week may have acquired as much as 12 semester hours in a foreign language without having taken four semesters (two full years). Such a student is required to take additional work here in the same language until he has completed four semesters (or an equivalent combination of high school years and college semesters). (3) At least one year (6 semester hours) in social studies, chosen from first-group courses in History, Political Science, Economics, Sociology, or Geography, is required. (4) At least one year (6 or 8 semester hours) of a laboratory science (Biology, Botany, Chemistry, Geology, Physics, or Zoology) is required.

The remaining hours of the Junior College program (roughly a minimum of 22 to 24 hours) should be devoted to the prerequisite courses required by the prospective major department (as stated following the departmental staff in the courses of instruction section of the CATALOGUE) or recommended by the advisers in the field-of-study major (see pamphlets prepared by the respective advisers), together with appropriate electives. Electives in Art, Philosophy, or Religion are recommended.

The *Science* curriculum requirements in English are the same as those of the Arts and Letters curriculum. A year course of social study is required. The foreign-language requirement is the same as for the Arts and Letters curriculum, except that French or German is specified. At least 6 semester hours in Mathematics must be taken; additional work in Mathematics is required of prospective majors in Chemistry or Physics. In science, the student should take courses in both biological and physical sciences, bearing in mind the prerequisites stated by the department under which he expects to major, as well as specified prerequisites in certain departments (such as Mathematics and Chemistry for majors in Physics, or Mathematics and Physics for majors in Chemistry).

A transfer student admitted to Columbian College with deficiencies in freshman or sophomore work (whether in amount or in distribution of courses), corresponding to the programs outlined above, is required to begin to make up such deficiencies immediately upon admission to Columbian College, and to carry courses toward this end each semester until all the general education requirements described above are satisfied. Students transferring from the School of Government must complete pre-Columbian College requirements in science and in literature as prescribed in the Arts and Letters curriculum. Electives in Art, Philosophy, or Religion are recommended.

Amount of Work

A full-time student who is not on probation may take ordinarily not more than 17 semester hours. A student employed more than 24 hours a week, who is not on probation, may take not more than 10 hours.

A full-time student whose quality-point index is 3.50 or higher may take not more than 19 hours. An employed student who meets the same standard may take not more than 12 hours.

A student previously unemployed who accepts employment subsequent to registration or at any time during a semester is required to report that fact immediately to the Dean, in order that adjustments in schedule may be made, if necessary, to bring his program within the Faculty's limitations upon the amount of work to be carried by an employed student.

Attendance

The student is held responsible for all the work of the courses in which he is registered, and all absences must be excused by the instructor in charge before provision is made for the student to make up the work missed. Excessive absence in any course will lead to loss of credit in that course, even though other requirements, such as tests, term papers, and examinations, are met.

Classification of Students

A student who has completed less than 30 semester hours in Columbian College, and who has registered his major at the Office of the Registrar is classed as a *junior*. A student who has completed 30 hours in Columbian College, including at least one course in his major, is classed as a *senior*. A student who has satisfactorily completed the work for the Bachelor's degree, and whose program of study has been approved and filed in the Office of the Registrar, is classed as a ***master in course***.

Independent Study Plan

Under the independent study plan a student of demonstrated capacity, with special interest in the subject matter of a course, may be permitted to undertake independent study under the personal direction of an instructor, in accordance with the rules of the department or departments concerned. Credit under this plan is limited to the specific course-credits as designated in the list of courses of instruction in the Catalogue.

Correspondence and Home-Study Courses

No credit is given for work done by correspondence or in home-study courses.

THE BACHELOR'S DEGREES

Upon the satisfactory completion of the undergraduate requirements of Columbian College, the degree of Bachelor of Arts or Bachelor of Science is conferred.

In cooperation with the School of Medicine a seven-year curriculum leading to the combined degrees of Bachelor of Arts and Doctor of Medicine is offered.

REQUIREMENTS FOR THE DEGREES

Residence

For the residence requirement, see pages 52–53. Students intending to transfer to Columbian College from a non degree-granting division of the University should note specifically the regulation concerning transfer within the University (see pages 50 and 51).

Scholarship

The system of grading and of computing scholarship is described in detail on pages 48 and 49.

In order to graduate, a student must have a general quality-point index of at least 2.00. In addition, the student with a Departmental Major must have a quality-point index of at least 2.50 in his major subject. Grades in courses taken at other institutions are not considered in computing the quality-point index. The student with a Field-of-Study Major meets the qualitative requirement by passing the Major Examination.

In computing the quality-point index in the major, all second-group and third-group courses in the major field taken at The George Washington University are included, even though minimum requirements for the major may have been exceeded, except when registration for graduate credit is approved. Grades received in first-group courses are not considered.

Probation.—A student must maintain a quality-point index of at least 2.00, or be placed on probation. A student remains on probation as long as his quality-point index is below 2.00, or until his probation is removed by the Committee on Scholarship.

Suspension.—A student who has a quality-point index below 1.50 or who is placed on probation for a third semester, whether successive or after an interval, is suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the Committee on Admission and Advanced Standing that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

The foregoing scholarship rules are applied to a student with a limited schedule only when he has undertaken a minimum of 15 semester hours.

CURRICULUM REQUIREMENTS

The curriculum requirements for the Bachelor's degrees include at least 60 semester hours beyond the requirements of the Junior College (the curriculum in *Arts and Letters* or in *Science*) and the satisfactory completion of the major. Each program must be approved by the major adviser and by the Dean.

At least 24 hours of the last 60 hours counted toward the Bachelor's degree must be taken in subjects* not included in the major field or department. The student should consult his major adviser at each registration regarding the inclusion in his program of suitably distributed electives.

Except for students registered for the combined degrees of Bachelor of Arts and Doctor of Medicine, not more than 12 semester hours of professional courses may be included in the 124 hours required for the Bachelor's degrees in Columbian College. Columbian College students electing professional courses under this rule must obtain the approval, in advance, of the Dean's Council of Columbian College. Ordinarily courses in Physical Education, Secretarial Studies, and technical courses in Education will not be approved for credit toward a degree in Columbian College.

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* Art, Biology, Botany, Chemistry, Classical Languages and Literatures, Economics, English, Geography, Geology, Germanic Languages and Literatures, History, Journalism, Mathematics, Philosophy, Physics, Political Science, Psychology, Religion, Romance Languages and Literatures, Slavic Languages and Literatures, Sociology, Speech, Statistics, Zoology.

After selecting a curriculum, a student may not change to another except by permission of the Dean and on condition that he fulfill the requirements of the curriculum to which he changes which are in effect at the time the change is approved by the Dean.

Each student is required to select and file with the Registrar a choice of major upon entering Columbian College. He may change the major only with the consent of the Dean and of the department or committee concerned, and must meet the requirements for the new major which are in effect at the time the change is approved by the Dean.

First-group courses may be required as prerequisites to undergraduate-major programs, but because of their introductory character may not be counted as part of such programs. (See "Explanation of Course Numbers.")

Students transferring from other institutions or from other schools, colleges, or divisions in this University with major requirements wholly or substantially met will, nevertheless, be required to complete satisfactorily at least 12 semester hours of approved work in the major field in Columbian College in order to receive a Bachelor's degree. This work will count as part of the minimum residence requirement.

Examinations for Waiving Curriculum Requirements.—A student desiring to omit a required or prerequisite course may take such examination as the department prescribes, and, on passing satisfactorily, he may be relieved of the curriculum or prerequisite requirement in that subject and may qualify for registration in an advanced course. Passing of this examination shall not entitle him to any credit toward a degree. A student desiring to take such examination should make written request of the Dean and pay the required fee at the Office of the Treasurer before the date of the examination specified in the University calendar.

Use of Correct English.—Any student whose English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean and to the Committee on the Use of Correct English. The Chairman of the Committee may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed by failure to make up any such deficiency in English to the satisfaction of the Committee and the Dean.

GRADUATE RECORD EXAMINATIONS

During the final semester of the senior year students in Columbian College are required to take the following Graduate Record Examinations: the Aptitude Test, which provides a measure of general scholastic ability at the graduate level; and Area Tests (achievement), which measure breadth of knowledge and understanding in three broad areas of the liberal arts: Natural Science, Social Science, and the Humanities. (For further information concerning the Graduate Record Examinations, see page 53.)

DEGREE PROGRAMS

Bachelor of Arts

The work of the junior and senior years, including a major in one of the following major fields, must be approved by the major adviser and by the Dean.

Major Fields.—American Thought and Civilization; Art (1) Art History and Theory, (2) Drawing and Painting, (3) Sculpture, and (4) Commercial Art; Biology; Botany; Chemistry; Economics; English Literature; French Literature; Geography; Geology; Germanic Languages and Literatures; History; Journalism; Latin American Civilization; Mathematics; Philosophy; Physics; Political Science; Psychology; Religion; Sociology; Spanish American Literature; Spanish Literature; Speech (Speech or Dramatic Art); Statistics; Zoology.

Combined Degrees of Bachelor of Arts and Doctor of Medicine.—A candidate for the combined degrees of Bachelor of Arts and Doctor of Medicine must: (1) complete the Medical School entrance requirements (see page 17); (2) fulfill the Junior College Arts and Letters requirements (see page 68); (3) fulfill the Columbian College residence requirement of at least thirty semester hours; (4) obtain the approval of the Dean of Columbian College at the time of entering the School of Medicine; (5) obtain the recommendation of the Dean of the School of Medicine at the completion of all prescribed courses in the first year of the School of Medicine, at which time the degree of Bachelor of Arts will be conferred (professional work taken at another institution will not satisfy the major requirement for the combined degrees); (6) maintain throughout the entire course the scholarship level required for graduation.

Bachelor of Science

The work of the junior and senior years, including a major in one of the following sciences, must be approved by the major department or division and by the Dean.

Biological Sciences
- Biology
- Botany
- Zoology

Physical Sciences
- Chemistry
- Geology
- Mathematics
- Physics
- Statistics

THE UNDERGRADUATE MAJOR

There are two types of undergraduate majors: the field-of-study major and the departmental major.

THE FIELD-OF-STUDY MAJOR

Each Field-of-Study Major covers a carefully worked out field of coordinated study and is under the supervision of the appropriate department and the Columbian College Committee on Studies.

The *Field-of-Study Major* requires no specific number of semester hours, no specific program of courses, and no specific quality-point index for the major, although the student is required to meet the over-all general requirements for the degree (at least 124 semester hours with a quality-point index of at least 2.00). The Major Examination in the Field-of-Study Major replaces all of the traditional quantitative and qualitative requirements for a major. Ability to pass the Major Examination is assumed to be a convincing demonstration that the student possesses the breadth, depth, and quality of knowledge of his major usually defined in terms of semester hours, courses, grades, and a better-than-average quality-point index. A pamphlet prepared under the direction of the adviser in the field of study and obtainable either from the adviser or from the Office of the Dean of Columbian College provides the information needed by the prospective student, who should place himself under the direction of the appropriate adviser immediately upon completing Junior College work and beginning his junior year (the first senior-college year) in Columbian College.

The Field-of-Study Major places special emphasis on the intellectual development of the individual student. Programs in the same major may vary, depending upon the individual student's background, previous study, reading habits, and aptitudes. The student is expected to consult his adviser frequently, and the special proseminar offered in the field gives him further opportunity for individual advice and direction in pursuing a program especially adapted to his needs and abilities. A close student-adviser relationship is essential for the student's success under the Field-of-Study Major plan.

The following Field-of-Study Majors are offered: (1) American Thought and Civilization, (2) Biology, (3) English Literature, (4) French Literature, (5) History, (6) Latin American Civilization, (7) Philosophy, (8) Spanish American Literature, (9) Spanish Literature, (10) Statistics, (11) Zoology.

The major in Biology extends broadly over the field of Biological Sciences and those in American Thought and Civilization and in Latin American Civilization involve studies in two areas, those of Languages and Literatures and of Social Sciences. The other Field-of-Study Majors, with the exception of the major in Spanish American Literature, replace departmental majors in their respective fields. A candidate for a Bachelor's degree with a major in Biology, English Literature, French Literature, History, Philosophy, Spanish American Literature, Spanish Literature, Statistics, or Zoology must elect a Field-of-Study Major.

Proseminar in the Major

For the convenience of the student a proseminar is offered in each field of study. This course, planned and administered by the professor or adviser responsible for the field, will advise, guide, and instruct the student in his reading, study, and laboratory exercises in order to assist him in gaining a coordinated knowledge of his field. It is a presentation of the content and methods of the major field as a whole through the organization and coordination of the knowledge obtained in the various formal courses in the major subject and of material not usually included in such courses. This course is not required. Six semester hours, but no qualitative grade, may be assigned. When registered in this course, the student will have the privilege of visiting, subject to the approval of the instructor, any other appropriate course offered in the College. (Regular attendance in a course, either for credit or as an auditor, requires registration and payment of tuition.) Proseminars are open only to the student who has been accepted as a candidate under that specific major.

The Major Examination

The Major Examination will normally be taken by the student at the close of the senior year; in the case of a student on a limited schedule, the Major Examination may be taken not earlier than one calendar year before graduation. A student who fails to pass a Major Examination may, at the discretion of the Columbian College Committee on Studies, be reexamined at a later regular major-examination period. The Committee on Studies will have general supervision of the preparation, reading, and grading of Major Examinations. Major Examinations will be held each semester on dates fixed by the department or departments concerned, but in no case later than January 15 for the fall semester, May 15 for the spring semester, and August 7 for the summer sessions.

DEPARTMENTAL MAJORS

Departmental Majors, unlike Field-of-Study Majors, are specifically defined in terms of credit hours, required courses, and the attainment of a quality-point index of at least 2.50 in all second-group courses taken in the major field. The minimum specific requirements for Departmental Majors are listed below the staff of instruction of the department concerned in the section of the CATALOGUE devoted to courses of instruction. The Executive Officer of the Department, or designated departmental adviser, should be consulted at registration concerning the student's program of courses; and the entire program, including electives, must be approved by the Department. The student is also expected to consult the Executive Officer or adviser in all matters affecting his program of studies, such as changes, substitutions, or withdrawals, and especially concerning his progress in his courses. As far as possible the close student-adviser relationship developed in the Field-of-Study Major will be cultivated also in Departmental Majors.

Until further notice Departmental Majors will be offered in the following: Art (1) Art History and Theory, (2) Drawing and Painting, (3) Sculpture, and (4) Commercial Art; Botany; Chemistry; Economics; Geography; Geology; Germanic Languages and Literatures; Journalism; Mathematics; Physics; Political Science; Psychology; Religion; Sociology; Speech (Speech or Dramatic Art).

THE MASTER'S DEGREES

Upon the satisfactory completion of the graduate requirements of Columbian College, the degree of Master of Arts or Master of Science is conferred.

DEFINITION OF THE MASTER'S WORK

The study leading to the degree of Master of Arts or Master of Science is a comprehensive survey of a field of knowledge. It is a continuation of the work of the student's undergraduate major and involves a greater acquaintance with scholarly method.

The student must satisfy certain minimum requirements as to previous preparation, residence, ability to read an approved modern foreign (European) language, and courses taken; but these requirements, while essential, are regarded primarily as qualifying measures. The student's knowledge of his field, as demonstrated by his thesis and by the results of his Master's Examination (together with such other examination involving special skills or techniques as the department or the Columbian College Committee on Studies may require), is the basis upon which the Master's degree is conferred.

MASTER OF ARTS

Graduate work leading to the degree of Master of Arts is offered in the following fields:

American Literary and Cultural History, Bacteriology, Biochemistry, Biology, Botany, Chemistry, Chemotherapy, Economics, English and American Literature, English Literature, French Literature, Geography, Geology, Germanic Languages and Literatures, History, Latin American Civilization, Mathematics, Pharmacology, Philosophy, Physics, Physiology, Political Science, Psychology, Religion, Religious Education, Sociology, Spanish American Literature, Spanish Literature, Speech Correction, Statistics, Zoology.

Special programs involving coordinated work in two or more departments may be arranged with the approval of the departments concerned and the Columbian College Committee on Studies.

Master of Science

Graduate work leading to the degree of Master of Science is offered in the following fields:

Anatomy, Bacteriology, Biochemistry, Biology, Botany, Chemistry, Chemotherapy, Geology, Mathematics, Pharmacology, Physics, Physiology, Psychology, Statistics, Zoology.

Special programs involving coordinated work in two or more departments may be arranged with the approval of the departments concerned and the Columbian College Committee on Studies.

REQUIREMENTS FOR THE DEGREES

Residence

Normally, an academic year of residence in Columbian College is required, i.e., completion of a minimum of 30 semester hours of work including the thesis, which is counted as the equivalent of 6 semester hours of course work. Summer work may be counted in residence, but in no case may the period of residence aggregate less than twenty-seven weeks. Not more than 12 semester hours (which must be approved in advance by the Dean of Columbian College) may be taken in another school or division of this University, and such work may not be counted toward both a degree in that school or division and the Master's degree in Columbian College. *No part of the minimum requirement may be taken elsewhere.* All work for the degree of Master of Arts or Master of Science must be completed within a maximum of three years, unless the Dean's Council considers the circumstances so unusual as to justify an extension of time.

Scholarship

A Master's candidate must attain the grade of "Ex." (excellent) in at least 6 semester hours of the course requirements for the degree in order to receive the Master's degree.

A student whose scholarship is unsatisfactory may be suspended by the Dean upon recommendation of the department under which the student is working. A Master's candidate who accumulates 9 hours or more of "Unsat." (including grades of "C" or lower in prerequisite courses) will be automatically suspended. Regarding the system of grading, see pages 48 and 49.

PROGRAM OF STUDIES

The student's program of studies must be outlined in detail at the beginning of his work, in triplicate, on forms available at the Office of the Dean. Each program is subject to the approval of the department and the appropriate member of the Columbian College Committee on Studies. The program may be revised as the occasion requires, but any change necessitates a repetition of the procedures just described.

The candidate for the Master's degree ordinarily may specialize exclusively in the field of his choice. Any student, however, whose undergraduate training does not include at least one full year of work in each of the following areas of study: (1) mathematics or science (with or without laboratory), (2) social science, and (3) the humanities (literature, philosophy, art, music, or religion), must make up this deficiency in his general education before being admitted to candidacy for the Master of Arts degree. This last provision does not apply to candidates for the Master of Science degree.

Courses numbered from 1 to 100 may not be credited toward the Master's degrees, but may in certain instances be required as a basis for advanced work. At least 6 semester hours of the course work required for the Master's degree must be taken in courses numbered over 200. Courses numbered over 100 may be credited toward the degree, provided the completion of additional work has been certified by the appropriate officer of instruction. (See "Explanation of Course Numbers".)

A student who expects to continue his studies for the degree of Doctor of Philosophy after receiving the Master's degree is strongly advised so to plan his program from the beginning that work for the lower degree may help to prepare him for the higher.

FOREIGN LANGUAGE REQUIREMENT

Before being admitted to candidacy the student must show that he has a reading knowledge (certified by the appropriate foreign-language department) of at least one modern foreign (European) language, selected by the department or committee under which he is studying. A student whose field is a modern foreign language or literature may not offer that language in satisfaction of the reading-knowledge requirement. Any Master's candidate who chooses to meet the Master's language requirement in French, German, or Spanish and has not passed the French, German, or Spanish foreign language examination by the end of fifteen attempted semester hours must register for French 49, German 49, or Spanish 49 as part of his next registration. The Master's reading examinations will be given at the first class meeting of French 49, German 49, and Spanish 49, again at the end of the courses, and on the last Saturday of the Summer Term; no student, however, will be permitted to take the examination after three unsuccessful attempts. Those enrolled in French 49, German 49, or Spanish 49 who pass the first examination are excused from the course and will receive a refund of tuition. Students who expect to take a reading examination in any approved language other than French, Spanish, or German should notify the Dean at the time of registration.

Students are reminded of the necessity for early satisfaction of this requirement, normally not later than the end of the first semester of registration for the degree.

ADMISSION TO CANDIDACY

A student must be admitted to candidacy before he begins the last half of his work for the Master's degree, i.e., not later than the completion of 15 semester hours of degree courses. Application for admission to candidacy is made on a form obtained at the Office of the Dean, and must be approved by the appropriate representative of the department or committee and by the Dean. If a prospective candidate, in his previous academic work, has not substantially satisfied the prerequisites for the Master's degree, including the undergraduate major as defined by the appropriate department or committee, he will not be admitted to candidacy until such deficiency has been made up. He may make up his deficiencies by electing appropriate courses in addition to those counted toward his degree.

THE THESIS

The thesis may be of a research, expository, critical, or creative type. The main purpose of a Master's thesis is to demonstrate the student's ability to make independent use of the information and training acquired through his other disciplines, and to furnish objective evidence of his constructive powers in his chosen field. Registration for the thesis must be no later than the beginning of the final year of preparation, unless the professor in charge of the thesis permits registration at the beginning of the final semester. The choice of the thesis subject must be approved by the professor in charge of the student's field and recorded in the Office of the Registrar by the date announced in the University calendar. Registration for the thesis is ordinarily made on the basis of three hours for each of two successive semesters. In exceptional cases, and with the approval of the professor in charge of the thesis, the student may register for the entire six hours during a single semester. The typewritten thesis in its final form must be submitted by the student for the approval of the professor in charge of the student's field and of the appropriate committee, not later than the date announced in the University calendar. Requirements regarding the form of the thesis are stated on pages 53–54, and additional information will be supplied by the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished an additional successive academic year may be granted without further tuition payment. The student must, however, be registered in residence during this period. If the preparation of the thesis extends beyond the two-year period the student must register for it again, and pay tuition on the same basis as for a repeated course.

THE MASTER'S EXAMINATION

In addition to such other examinations as may be required, the candidate must pass a general written examination on the major subject. Examinations will be held on dates fixed by the department or committee, but in no case later than January 15 for the fall semester, May 15 for the spring semester, and August 7 for the summer sessions. The provisions of the field-of-study plan for undergraduate majors which concern the general examination for the major also apply to the Master's Examination. A candidate who fails to pass the Master's Examination may, in exceptional circumstances and with the specific approval of the Columbian College Committee on Studies, repeat the examination, but only after the lapse of one semester. If he fails a second time, no further opportunity to take the examination will be permitted.

THE GRADUATE COUNCIL

Arthur Edward Burns, Ph.D., *Dean and Chairman of the Graduate Council*

MEMBERS OF THE COUNCIL*

Joseph Hyram Roe, Ph.D., *Professor of Biochemistry*
Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*
Warren Reed West, Ph.D., *Professor of Political Science*
Francis Edgar Johnston, Ph.D., *Professor of Mathematics*
Benjamin Douglass Van Evera, Ph.D., Sc.D., *Professor of Chemistry*
Mitchell Dreese, Ph.D., *Professor of Educational Psychology*
Winfred Overholser, A.B., M.D., Sc.D., L.H.D., *Professor of Psychiatry*
Merle Irving Protzman, Ph.D., *Professor of Romance Languages*
Ralph Dale Kennedy, Ph.D., *Professor of Accounting*
Florence Marie Mears, Ph.D., *Professor of Mathematics*
Wood Gray, Ph.D., *Professor of American History*
Thelma Hunt, Ph.D., M.D., *Professor of Psychology*
Ira Bowers Hansen, Ph.D., *Professor of Zoology*
Paul William Bowman, Ph.D., *Professor of Biology*
Arthur Edward Burns, Ph.D., *Professor of Economics*
John Withrow Brewer, Ph.D., *Professor of International Law*
Paul Kenneth Smith, Ph.D., *Professor of Pharmacology*
Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*
Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*
Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*
Fred Salisbury Tupper, Ph.D., *Professor of English Literature*
Chester Elwood Leese, Ph.D., *Fry Professor of Physiology*
†Donald Stevenson Watson, Ph.D., *Professor of Economics*
Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*
Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
Ira Rockwood Telford, Ph.D., *Professor of Anatomy*
Robert Dale Campbell, Ph.D., *Professor of Geography*
Roderic Hollett Davison, Ph.D., *Professor of European History*
‡Wolfgang Herbert Kraus, Dr.Jur., S.J.D., *Professor of Political Science*
William Frederick Sager, Ph.D., *Professor of Chemistry*
Lewis Slack, Ph.D., *Professor of Physics*
Charles Adrian Michael Hogben, M.D., Ph.D., *Professor of Physiology*
George Elbert McSpadden, Ph.D., *Professor of Romance Languages*

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* The President of the University, the Dean of Faculties, and the Registrar of the University are members of the Council.

† On sabbatical leave spring semester 1958–59.

‡ On sabbatical leave 1958–59.

Clyde Lorrain Cowan, Jr., Ph.D., *Professor of Physics*
Reuben Esselstyn Wood, Ph.D., *Professor of Chemistry*
Harold George Mandel, Ph.D., *Professor of Pharmacology*
Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*
Mary Louise Robbins, Ph.D., *Associate Professor of Bacteriology*
Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
*James Norman Mosél, A.M., *Associate Professor of Psychology*
William Columbus Davis, Ph.D., *Associate Professor of Latin American History*
Ronald Bettes Thompson, Ph.D., *Associate Professor of European History*
Philip Henry Highfill, Jr., Ph.D., *Associate Professor of English Literature*
†Theodore Peter Perros, Ph.D., *Associate Professor of Chemistry*
John Whitefield Kendrick, Ph.D., *Associate Professor of Economics*
Wilson Emerson Schmidt, Ph.D., *Associate Professor of Economics*
William Edward Schmidt, Ph.D., *Associate Professor of Chemistry*
Clarke Davison, Ph.D., *Associate Professor of Pharmacology*

CONSULTANTS IN RESEARCH

Samuel Jacob Ajl, Ph.D., *Assistant Chief, Department of Bacteriology, Communicable Diseases Division, Walter Reed Army Institute of Research;* Bacterial Physiology and Nutrition
Antonio Alonso, A.M., *Professor Emeritus of Spanish;* Modern Spanish Literature
Robert Whitney Bolwell, Ph.D., Litt.D., *Professor Emeritus of American Literature;* Literary Nationalism
George McSpadden Briggs, Ph.D., *Chief, Nutrition Unit, Laboratory of Biochemistry and Nutrition, National Institute of Arthritis and Metabolic Diseases;* Animal Nutrition
Bernard Beryl Brodie, Ph.D., *Chief, Laboratory of Chemical Pharmacology, National Heart Institute;* Biochemical Detoxication
Dean Burk, Ph.D., *Head, Cytochemistry Unit, National Cancer Institute;* Tissue Respiration in Biochemistry
William Robert Carroll, Ph.D., *Biochemist, Laboratory of Physical Biology, National Institute of Arthritis and Metabolic Diseases;* Chemistry and Metabolism of Proteins
Robert Watkins Clarke, Ph.D., *Chief, Department of Surgical Physiology, Walter Reed Army Institute of Research;* Hemo-Dynamics
Gerhard Colm, Dr. rer. pol., *Chief Economist, National Planning Association;* Public Finance; National Income
William Rankin Duryee, Ph.D., *Research Professor of Physiology;* Cellular Physiology

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* On sabbatical leave 1958–59.
† On sabbatical leave spring semester 1958–59.

Francois Naftali Frenkiel, Ph.D., *Physicist, Applied Physics Laboratory, Johns Hopkins University;* Aerodynamics

Henry Field Haviland, Jr., Ph.D., *Senior Staff Member, Brookings Institution;* International Relations, especially American Foreign Policy

Roger Hilsman, Ph.D., *Chief, Foreign Affairs Division, Legislative Reference Service, Library of Congress;* International Relations

Leon Jacobs, Ph.D., *Head, Section of Protozoal Diseases, National Institute of Allergy and Infectious Diseases;* Microbiology

Lent Clifton Johnson, M.D., *Chief, Bone and Joint Pathology, Armed Forces Institute of Pathology, Walter Reed Army Medical Center;* Histology

Solomon Kullback, Ph.D., *Chief, Research and Development Division, United States Department of Defense;* Statistics: Multivariate Analysis

Howard Maer Lenhoff, Ph.D., *Acting Chief, Biochemistry Section, Armed Forces Institute of Pathology, Walter Reed Army Medical Center;* Protein Biosynthesis

Ladislaus Laszlo Marton, Ph.D., *Physicist, Atomic Physics, Electronics Division, National Bureau of Standards;* Electron Optics

Leland Wilbur Parr, Ph.D., *Professor Emeritus of Bacteriology;* Immunity in Tuberculosis; Coliform Bacteria and Antibiosis

Jacques Jacobus Polak, Ph.D., *Deputy Director, Research Department, International Monetary Fund;* International Finance

Sanford Morris Rosenthal, M.D., *Chief, Section on Pharmacology and Toxicology, National Institute of Arthritis and Metabolic Diseases;* Cardiovascular Shock

Leonard Peter Schultz, Ph.D., *Curator of Fishes, United States National Museum;* Vertebrate Zoology: Ichthyology

Demitri Boris Shimkin, Ph.D., *Supervisory Statistician, Bureau of Census, United States Department of Commerce;* Soviet Economics

Lyman Bradford Smith, Ph.D., *Associate Curator, Division of Phanerogams, Department of Botany, Smithsonian Institution;* Taxonomy

Sidney Udenfriend, Ph.D., *Chief, Laboratory of Clinical Biochemistry, National Heart Institute;* Amino Acid Metabolism

Erwin Paul Vollmer, Ph.D., *Endocrinology Consultant, Cancer Chemotherapy, National Service Center;* Endocrinology

Ludwig von Sallmann, M.D., *Chief, Ophthalmology Branch, National Institute of Neurological Diseases and Blindness;* Neuro-ophthalmology

Frank Mark Weida, Ph.D., *Professor Emeritus of Statistics;* Theoretical Statistics: Probability and Sampling; Applied Statistics: Econometrics

Henry Welch, Ph.D., *Director, Division of Antibiotics, Food and Drug Administration, Department of Health, Education, and Welfare;* Antibiotics

Willard Hull Wright, D.V.M., Ph.D., *Scientist Director, United States Public Health Service; Chief, Laboratory of Tropical Diseases, National Institute of Allergy and Infectious Diseases;* Parasitology

Ralph Aubrey Young, Ph.D., *Director, Division of Research and Statistics, Board of Governors, Federal Reserve System;* International Finance

GENERAL INFORMATION

INTRODUCTORY

The Graduate Council offers a program of advanced study and research leading only to the degree of Doctor of Philosophy. It was established in 1930 to replace the Graduate School which had formerly administered work for the Master's as well as the Doctor's degrees. The Graduate Council provides a doctoral discipline which moves freely across administrative lines dividing departments of instruction or fields of study. It gives personal supervision to a limited number of students, each of whom has his own consultative committee, examinations, and research direction.

FIELDS OF RESEARCH

The following fields of research have been authorized by the Graduate Council as those in which doctoral investigations and dissertations may be undertaken. The supporting fields of study required of all candidates for the degree of Doctor of Philosophy are specified for each individual student by his Consultative Committee before admission to study under the Council.

This list of fields is subject to such changes as the educational resources of the University may direct. The prospective student may address preliminary inquiries concerning his research interests to the member of the Council who is in charge of the field, or to the Dean of the Graduate Council.

Anatomy	
(1) Gross Anatomy; (2) Histology	Telford
Histology	Johnson
Neuro-ophthalmology	von Sallman
Bacteriology	
Antibiotics	Welch
Bacterial Physiology and Nutrition	Ajl
(1) Immunity in Tuberculosis; (2) Coliform Bacteria and Antibiosis	Parr

(1) Intestinal Microbiology; (2) Immunology: Antigenic Analysis	Griffin
Microbiology	Jacobs
Virology	Robbins

Biochemistry

Amino Acid Metabolism	Udenfriend
Animal Nutrition	Briggs
Biochemical Detoxication	Brodie
(1) Carbohydrate Metabolism; (2) Nutrition (emphasis on vitamins); (3) Pathological Chemistry	Roe
Chemistry and Metabolism of Proteins	Carroll
Lipids	Treadwell
Protein Biosynthesis	Lenhoff
Tissue Respiration	Burk

Biology

Cytology	Bowman

Botany

Taxonomy	Smith

Chemistry

Analytical	Schmidt
Inorganic	Naeser
Inorganic	Perros
Organic	Wrenn
Physical: Kinetics and Electrochemistry	Wood
Physical: Solubilities	Van Evera
Physical-Organic: Reaction Mechanisms	Sager

Economics

History of Economic Thought	Burns
(1) Economic Theory; (2) Economic Planning	Watson
International Economics	Schmidt
International Finance	Polak, Young
National Income	Kendrick, Colm
Public Finance	Colm
Soviet Economics	Shimkin
Transportation	Kennedy

Geography

Area Synthesis	Campbell

History

European: (1) Diplomatic since 1815; (2) The Modern Near East	Davison
European: Nationalism	Kayser
European: Russian and Soviet	Thompson
Latin American	Davis
United States: (1) Diplomatic; (2) Political	Merriman
United States: (1) Social; (2) Economic	Gray

Literatures and Languages

American: Literary Nationalism	Bolwell
English: (1) Sixteenth Century Drama; (2) Seventeenth Century Drama	Tupper
English: Eighteenth Century Literature	Highfill
Romance: Modern Spanish Literature	Alonso
Romance: (1) Romance Linguistics; (2) Spanish American Literature; (3) Spanish Literature	McSpadden
Romance: Seventeenth Century Literature	Protzman

Mathematics

Algebra: Finite Groups	Johnston
Analysis: Infinite Series	Mears

Pharmacology

(1) Chemotherapy; (2) Drug Metabolism	Smith
(1) Drug Metabolism; (2) Medicinal Chemistry	Mandel
Drug Metabolism	Davison

Physics

Electron Optics	Marton
(1) Experimental Nuclear Physics; (2) Radioactivity	Slack
Nuclear: Fundamental Particles	Cowan
Theoretical: Aerodynamics	Frenkiel

Physiology

(1) Blood Pressure Studies; (2) Neuro-Muscular Studies	Leese
Cardiovascular Shock	Rosenthal
Cellular Physiology	Duryee
Endocrinology	Vollmer
(1) Gastrointestinal Physiology; (2) Electrolyte Metabolism	Hogben
Hemo-Dynamics	Clarke

Political Science

International: Comparative Government and Political Theory	Kraus
International: International Politics and Organization	———
International Law: (1) War and Neutrality; (2) Arbitration	Brewer
International Relations	Hilsman
International Relations, especially American Foreign Policy	Haviland
United States: (1) The Legislative Process; (2) Governmental Organization and Administration	West

Psychiatry

Problems of Treatment (M.D. degree required for admission)	Overholser

Psychology

Counseling and Guidance	Dreese
Military Counseling and Guidance	Faith
Personnel Psychology	Mosel
(1) Psychological Measurements; (2) Abnormal Psychology	Hunt
Social Psychology	Tuthill

Statistics

Multivariate Analysis (1) Theoretical: Probability and Sampling;	Kullback
(2) Applied: Econometrics	Weida

Zoology

Parasitology: Parasitic Protozoa	Wright
Vertebrate: Embryology and Morphogenesis	Hansen
Vertebrate: Ichthyology	Schultz

ADMISSION PROCEDURE

For admission the student must possess adequate preparation for ad- anced study, including satisfactory Bachelor's and Master's degrees, or he equivalent, together with acceptable personal qualities and a capacity or creative scholarship. Previous graduate study should have been in he same general field as that proposed for doctoral study.

Before applying, the student should have personal interviews with the ean of the Graduate Council and the professor in charge of the central eld of study.

After application blank and transcripts of previous academic training ave been filed the student must demonstrate his ability to read either rench or German in the field of his major interest. Both French and erman are required, but only one at the time of admission. The stu- ent then meets his personal admission committee which makes its ecommendations to the Council. The committee may specify additional erequisites for the student's doctoral program.

STUDY FOR THE COUNCIL FELLOWSHIP EXAMINATION

The discipline for the degree is divided into two stages. The first is ade up of study in related fields of learning which support the general ea of research concentration, culminating in the Council Fellowship amination. The second stage is composed of research and investiga- n of a particular project in a special field and the presentation of such search in a written dissertation, culminating in the Final Examination.

At the beginning of the student's program of study leading to the uncil Fellowship Examination, a consultative committee is assigned to ect his work in a group of fields of learning, usually five or six in mber, deemed necessary to insure his breadth of knowledge and general npetence for continuing independent research, as well as to support dissertation project in his central field. Members of the consultative nmittee will advise the student concerning the scope and content of se supporting fields, and will assist the student in preparation for his amination in them.

This advanced study may be done by attending graduate courses of instruction and seminars, by conference with members of the student's committee, and by independent means. The examination, however, not credits or grades for work done in courses, is the sole test of the student's ability to enter upon the second phase of his doctoral discipline. The examination is a series of written tests usually extending over a period of one week. The major portion of a day is given to each part of the examination covering one of the fields of study on the student's program. If the results of the examination are satisfactory the student is admitted as a Fellow of the Graduate Council, to pursue his specialized study and research under the supervision of a member of the Council.

RESEARCH, THE DISSERTATION, AND THE FINAL EXAMINATION

After the student has been inducted as a Fellow of the Council and his research program has been arranged, he is responsible only to the member of the Council who directs his research project. As a Fellow, he may attend general meetings of the Council and participate in the programs of research discussion, and enjoy unrestricted use of all the academic facilities of the University. When necessary, the Graduate Council makes provision for sending the Fellow to some other institution, library, or laboratory for special study in connection with his doctoral investigation.

The doctoral dissertation is required of all Fellows as evidence of ability to perform scholarly research and to interpret its results. An extended summary of the dissertation is published in a periodical volume by the University for distribution to other institutions and libraries. Printed copies of detailed regulations concerning the dissertation are supplied to all candidates for the doctorate.

When the completed dissertation has been approved by the member of the Council in charge of the research project, the Fellow is presented for his final examination. This examination is oral and open to the public. The committee of examiners includes not only members of the Council competent in the research field or in closely related subjects, but also at least two qualified experts from other research institutions brought to the University to participate in the examination. If the Fellow satisfies the examining committee concerning the high quality and originality of his contribution to knowledge as well as his mastery of the scholarship and research techniques of his field, the Council recommends him for the degree of Doctor of Philosophy.

POST-DOCTORAL STUDY

The Council expects its graduates to continue their interest in advanced study and research, and to contribute to its program. All graduates are listed as Associate Fellows and, upon request, will receive notices of all general meetings. They may continue any studies in the University without payment of tuition, and enjoy all University library privileges. Such graduates are required to pay only the usual residence fee in order to establish their active membership in the University. The use of laboratory space and equipment is contingent upon availability, and the cost of all laboratory or special library material is paid by the graduate. Special arrangements for such privileges must be made with the Dean of the Council. Post-doctoral work taken under this privilege may not be applied toward any degree offered by the University.

REGULATIONS

Candidates and Fellows in the Graduate Council are subject to, and are expected to familiarize themselves with, the regulations regarding REGISTRATION, FEES AND FINANCES *stated on pages 13–28, and the University regulations stated on pages 48–55.*

Residence and Continuous Registration

The Graduate Council expects all students to work on their doctoral programs in residence, although there is no formal regulation concerning the minimum amount of time of resident study either in preparation for the Council Fellowship Examination or as a Fellow of the Council engaged in doctoral research. The student who undertakes either part of the doctoral program on full or limited schedule must, in accordance with University regulations, maintain continuous registration under the Graduate Council even when the Council has granted a leave of absence for study or residence elsewhere. Failure to maintain registration in each semester of the academic year disrupts the residence status of the student (see page 53). In such case, the student must reapply for admission to the Council, under whatever new conditions and regulations are set up by his consultative committee or the member of the Council who directs his research.

Teaching Fellowships and Graduate Assistantships

A limited number of Teaching Fellowships are assigned annually to certain departments of instruction open to doctoral students registered under the Graduate Council. In many departments of instruction graduate assistants are appointed to assist in the academic program. Applicants for teaching fellowships and graduate assistantships should inquire directly of the executive officer of the department concerned regarding vacancies, details of appointment, and the kind of personal data to be supplied for consideration.

A pamphlet describing details of the Graduate Council program, together with a current list of fields of research offered by the Council, will be sent upon request to the Office of the Graduate Council.

THE SCHOOL OF MEDICINE

THE FACULTY*

John Parks, M.S., M.D., *Dean of the School of Medicine*
Angus MacIvor Griffin, Ph.D., *Associate Dean of the School of Medicine*
Alvin Edward Parrish, M.D., *Associate Dean of the School of Medicine*

Joseph Hyram Roe, Ph.D., *Professor of Biochemistry*
Winfred Overholser, A.B., M.D., Sc.D., L.H.D., *Professor of Psychiatry*
Frederick A. Reuter, M.D., *Professor of Urology*
Harry Ford Anderson, M.D., *Professor of Dermatology and Syphilology*
John Parks, M.S., M.D., *Professor of Obstetrics and Gynecology*
Brian Blades, A.B., M.D., *Professor of Surgery*
Paul Kenneth Smith, Ph.D., *Professor of Pharmacology*
James Winston Watts, B.S., M.D., *Professor of Neurological Surgery*
Chester Elwood Leese, Ph.D., *Fry Professor of Physiology*
Thomas McPherson Brown, A.B., M.D., *Eugene Meyer Professor of Medicine*
Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*
Ronald Atmore Cox, A.B., M.D., *Professor of Ophthalmology*
Thomas Martin Peery, A.B., M.D., *Professor of Pathology*
William Woodrow Stanbro, M.D., *Professor of Radiology*
Charles Samuel Wise, B.S., M.D., *Professor of Physical Medicine and Rehabilitation*
Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
Charles Seymour Coakley, M.D., *Professor of Anesthesiology*
Ira Rockwood Telford, Ph.D., *Professor of Anatomy*
Paul Calabrisi, Ph.D., *Professor of Anatomy*
Harold Stevens, Ph.D., M.D., *Professor of Neurology*
Charles Adrian Michael Hogben, M.D., Ph.D., *Professor of Physiology*
Robert Henry Barter, B.S., M.D., *Professor of Obstetrics and Gynecology*
Harold George Mandel, Ph.D., *Professor of Pharmacology*
Ernest Alfred Watson Sheppard, M.D., C.M., *Clinical Professor of Ophthalmology*
William Staton Anderson, A.B., M.D., *Clinical Professor of Pediatrics*
Henry Lauran Darner, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*

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*The President of the University, the Dean of Faculties of the University, and the Registrar of the University are members of the Faculty.

William Stanley McCune, A.B., M.D., *Clinical Professor of Surgery*
Frank Nelson Miller, Jr., B.S., M.D., *Associate Professor of Pathology*
Joseph Michael LoPresti, B.S., M.D., *Associate Professor of Pediatrics*
James Jerry McFarland, Jr., B.S., M.D., *Associate Clinical Professor of Otolaryngology*
Victor Frederick Ludewig, A.B., B.S., *Administrator of the University Hospital*

COMMITTEES*

The Dean's Council

Joseph Hyram Roe
Brian Blades
Angus MacIvor Griffin
Winfred Overholser
Paul Kenneth Smith
Alvin Edward Parrish

Committee on Admissions

Paul Calabrisi, *Chairman*

Frank Nelson Miller, Jr.
Joseph Eugene Rankin
James Glover Sites
Paul Charles Adkins

Committee on Curriculum

Thomas Martin Peery, *Chairman*

Carleton Raymond Treadwell
Monroe James Romansky
Joseph Michael LoPresti
Ira Rockwood Telford
Charles Adrian Michael Hogben
James Richard Thistlethwaite

Committee on Scholarship

Joseph Hyram Roe, *Chairman*

Leland Wilbur Parr
Thomas McPherson Brown
Brian Blades
Ira Rockwood Telford

Committee on Research

Angus MacIvor Griffin, *Chairman*

Paul Kenneth Smith
Harold Stevens
John McCallum Evans
Carleton Raymond Treadwell
Charles Adrian Michael Hogben
Howard Clemeth Pierpont

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* The Dean of the School of Medicine is a member ex officio of all committees.

COMMITTEE ON LIBRARY

Chester Elwood Leese, *Chairman*

Harold George Mandel
Seymour Alpert
Mary Louise Robbins
Stewart William Bush

COMMITTEE ON GRADUATE AND POSTGRADUATE EDUCATION

Thomas McPherson Brown, *Chairman*

Brian Blades
Robert Henry Barter
Alvin Edward Parrish
Thomas Martin Peery
Leon Yochelson
Victor Frederick Ludewig

COMMITTEE ON APPOINTMENTS AND PROMOTIONS

Brian Blades, *Chairman*

Paul Kenneth Smith
Thomas Martin Peery
Angus MacIvor Griffin
Alvin Edward Parrish

ADVISORY COMMITTEE ON CANCER RESEARCH

Paul Kenneth Smith, *Chairman*

Joseph Hyram Roe
Mary Louise Robbins
William Newman
Calvin Trexler Klopp
Louis Katz Alpert
Charlotte Patricia Donlan
Gerald Fred Hungerford
Jeremiah Keith Cromer

ADVISORY COMMITTEE ON REHABILITATION

Charles Samuel Wise, *Chairman*

Thomas McPherson Brown
John Pletch Adams
John McCallum Evans
James Richard Thistlethwaite

GENERAL INFORMATION

INTRODUCTORY

The School of Medicine of The George Washington University was opened in March 1825. Of the medical schools now in existence in the United States, it is the eleventh in chronological order of founding. The University Hospital and Dispensary were established in 1898 as a part of the organization of the School. The new George Washington University Hospital was opened in 1948, and the Cancer Clinic building was completed in 1954. Additional clinical facilities are used at the District of Columbia General Hospital, Children's Hospital, St. Elizabeths Hospital, and Mt. Alto Veterans Administration Hospital. The School of Medicine maintains close affiliation not only with the various divisions of the University, but also with the numerous medical research and scientific establishments of the Federal Government in the Nation's Capital. Washington provides world renowned library facilities, comprehensive museums, and excellent recreational facilities which are available to students.

OBJECTIVES

The purpose of the School of Medicine is to prepare men and women in the art and science of medicine to meet the health needs of a growing, ever changing society. It is the responsibility of the School of Medicine to provide its students with a systematic plan of instruction in the basic medical sciences; with well guided clinical experience; with opportunities for expression in research; and with a philosophy in keeping with the highest ethics of the profession.

For undergraduates the aims of the School of Medicine are: (1) to select students of superior ability and character, (2) to teach the theoretical principles, laboratory techniques, and clinical applications of the medical sciences, and (3) to provide a diversity of clinical experience through well supervised clerkships in University, public, and federal hospitals providing facilities for all specialized fields of medicine.

The aims of the School of Medicine in graduate and postgraduate education are: (1) to provide well planned services for internship and resident training in both general and specialized practices, (2) to direct an expanding program of applied research, integrated with teaching at the School of Medicine, and in keeping with the growth of Washington as one of the world's great centers of medical investigation, and (3) to provide postgraduate instruction in the most recent advances in medicine.

To achieve these objectives the School of Medicine has developed a progressive plan of instruction outlined below and a balanced, comprehensive curriculum. To carry out the program the University seeks to maintain a faculty of adequate size and of outstanding ability, making use of facilities which provide exceptional opportunities for research and clinical training.

PLAN OF INSTRUCTION

The curriculum is a progressive one, beginning with basic medical science and expanding to include the more complex aspects of the prevention of disease and care of the sick. The teaching program is organized under the various departments of the School of Medicine. (See "Courses of Instruction".)

The schedule for the first year begins with an orientation program designed to introduce the new students to the Faculty, to the upperclassmen, and to the environment for their medical education.

During the first week the students meet for informal panel discussions with upperclassmen and members of the Faculty on such subjects as curriculum, medical terminology, use of library facilities, evaluation of scientific evidence, ethics and aims of the medical profession, and student health.

During the first year instruction is given in anatomy, biochemistry, and physiology using the classroom and laboratory facilities of the School of Medicine. Early in their medical careers students are encouraged to participate in research. Practical problems in patient care are introduced at conferences in the University Hospital.

Having completed the preliminary study of structure and function of the normal body, the student progresses in the second year to a consideration of disease processes and mechanisms. The various microbial agents capable of causing disease are studied in the course in microbiology, and the effect of these and other harmful substances upon the body are studied in the course in pathology. The mode of action of the various therapeutic agents is studied in the course in pharmacology. Introductory lectures and demonstrations in the clinical sciences are given during the second semester in order to prepare the student for the responsibilities of the following year.

In the third year the student is assigned to the District of Columbia General Hospital for lectures, conferences, and closely supervised clinical experience. He serves in the various divisions of the hospital assisting in the preparation of clinical records and performing certain clinical laboratory examinations. He learns to carry out the usual ward procedures and to use certain diagnostic and therapeutic instruments. During this period instruction is individual or in small groups. The instructor reviews the student's observations at the bedside and guides him in the development and application of his knowledge.

During the summer period following the third year each student is required to spend eight weeks in one of the clinical facilities of the School of Medicine.

In the fourth year the student's responsibility in the care of hospitalized patients continues and enlarges, but at least an equal part of his time is spent in the study and care of clinic patients. The University Hospital, the District of Columbia General Hospital, Children's Hospital, Mount Alto Veterans Administration Hospital, and St. Elizabeths Hospital provide the student with experience in many fields. In this final year of formal medical education stress is placed upon the total patient and his environment so that emotional and economic as well as physical factors may be considered in the process of restoration of the individual to a state of health and happiness.

Upon satisfactory completion of the four-year course of the School of Medicine, the student is well prepared for graduate training leading to a career in research, medical education, general or specialty practice, or government service.

THE CURRICULUM

Subject	Lecture	Laboratory	Conference	Total
First Year				
Gross Anatomy	112	256	—	368
Embryology and Histology	48	96	—	144
Neuroanatomy	32	64	—	96
Biochemistry	76	180	32	288
Physiology	144	160	32	336
Biostatistics	16	—	—	16
Disaster Medicine	16	—	—	16
Introduction to Medical Psychology	16	—	—	16
Psychopathology	16	—	—	16
Total	476	756	64	1,296
Second Year				
Bacteriology	64	144	16	224
Pathology	60	120	40	220
Pharmacology	80	80	24	184
Physical Diagnosis	16	96*	—	112
Psychiatry	16	48	—	64
Clinical Microscopy	—	48	—	48
Medicine	64	—	—	64
Surgery	48	—	—	48
Hygiene	32	—	—	32
Pediatrics	32	—	—	32
Neurology	16	—	—	16
Obstetrics	16	—	—	16
Psychosomatic Disorders	16	—	—	16
Radiology	16			16
Forensic Pathology and Medical Jurisprudence	16	—	—	16
Dermatology	16	—	—	16
Total	508	536	80	1,124

* Practical exercises and/or clinics.

THIRD YEAR

Subject	Lecture, Conference, or Clinic	Clerkship	Total
Anesthesiology	16	—	16
Clinical Pathological Conference	32	—	32
Dermatology and Syphilology	16	—	16
Medicine	16	240	256
Medical Laboratory	—	60	60
Neurology	—	60	60
Obstetrics and Gynecology	48	120	168
Ophthalmology	16	—	16
Pediatrics	16	120	136
Physical Medicine	12	—	12
Psychoneuroses	16	—	16
Surgery	61	240	301
Otolaryngology	16	—	16
Admitting and Emergency	—	120	120
Therapeutic Conference	16	—	16
Total	281	960	1,241

SUMMER CLERKSHIP

Medicine, Surgery, Obstetrics and Gynecology *or* Pediatrics—eight weeks between third and fourth years.

FOURTH YEAR

A) Lecture

Subject	Hours
Clinical Pathological Conference	27
Forensic Medicine	12
Pediatrics	27
Public Health Practice	5
Surgical Anatomy	14
Surgical Pathology	8
Total	93

B) Clerkship*

Division	Weeks
Medicine	9
Surgery	9
Obstetrics and Gynecology	6
Pediatrics	6
Cancer Clinic	3
Psychiatry	3
Total	36

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[*] A three-week elective may be substituted for part of the clerkship in the division where the summer clerkship was served.

EQUIPMENT AND FACILITIES

Medical School Building.—The building housing the School of Medicine is a five-story structure with lecture rooms, classrooms, students' rooms, and the following laboratories: anatomy; bacteriology, hygiene, and preventive medicine; biochemistry; pathology; pharmacology; and physiology.

They are fully equipped to enable students to pursue adequately the laboratory courses and to acquire the technical skill necessary in modern clinical and investigative work.

Research and Administration Building.—The Research Building houses special laboratories for graduate and staff research in the departments of Anatomy; Biochemistry; Pharmacology; Physiology; and Bacteriology, Hygiene, and Preventive Medicine. Special facilities are provided for the study of radio-active compounds, for tissue-culture techniques, and for virologic procedures. Selected students are invited to participate in certain aspects of the research program either on a volunteer basis or with the support of special Research Scholarships.

On the first floor, the west wing is occupied by a modern medical library; the east wing houses the administrative offices of the School of Medicine. Photographic laboratories and other facilities for audio-visual aids to education are on the second floor.

Medical Library.—The Medical Library in modern, well-equipped quarters on the first floor of 1339 H Street NW., contains 17,700 carefully selected volumes, including the new medical works and the principal medical journals.

Interlibrary loan service is maintained with other medical and scientific libraries.

The Medical Library is open from 9:00 A.M. to 10:00 P.M. each class day, Monday through Friday, and from 9:00 A.M. to 5:00 P.M. Saturday.

A branch of the Medical Library is maintained in the University Hospital for the use of the resident physicians, interns, and students. It is open Monday through Friday, 1:00 to 5:00 P.M. and 6:00 to 9:00 P.M. and Saturday, 1:00 to 5:00 P.M.

The George Washington University Hospital.—This 400-bed hospital is staffed and directed by the Faculty of the George Washington University School of Medicine. It provides excellent clinical opportunity for the instruction of medical students. Virtually every specialty in the fields of medicine and surgery has assigned space and equipment in both the outpatient department and the bed-patient section of this modern hospital.

GOVERNMENT MUSEUMS

The Armed Forces Institute of Pathology, on the grounds of Walter Reed Army Medical Center, affords unexcelled opportunity for study of conditions met in general medicine and surgery as well as those of special military significance. Its collection of anatomical and pathological specimens comprises material received from all areas of the world and is unequaled in this country. The Museum of Hygiene, the National Museum, the Smithsonian Institution, the Botanic Gardens, and the various collections of the Department of Agriculture all afford opportunity for study of materials of special interest in various areas of Medicine and its allied sciences.

CLINICAL FACILITIES

Students at the George Washington University School of Medicine receive clinical training at the University Hospital, at the new University Cancer Clinic, and at four affiliated hospitals. In the very first year the medical student begins his work in the hospital as well as in the lecture halls and classrooms.

The George Washington University Hospital.—All clinics are under the supervision of the Dean and the chiefs of services. The individual student has direct responsibility to patients under supervision. Clinical and clinical pathological conferences are held in which the history of patients, the physical findings, laboratory records, and post-mortem pathology are presented and correlated.

The Outpatient Department.—The Outpatient Department has clinical facilities for each Service in the Hospital. Fourth-year students are assigned in rotation by section for clinical instruction in the Outpatient Department.

The George Washington University Cancer Clinic.—This modern building, opened in 1954, houses the Cancer Detection Clinic; the Helen L. and Mary E. Warwick Memorial; and special laboratories for research related to the nature, diagnosis, and treatment of cancer.

The facilities of the Cancer Detection Clinic are used for the teaching of medical students. The diagnosis and treatment of various forms of neoplasms are presented. The results of the treatment of neoplasms are evaluated by follow-up studies.

District of Columbia General Hospital.—Washington's large city hospital has 1,300 beds and an outpatient department in which approximately 88,898 patient-visits are made each year. It provides clinical opportunities in virtually every branch of medicine and surgery.

Children's Hospital.—This is one of the largest and best known hospitals for children in the United States. Medical students receive training and clinical experience in pediatrics on both clinic and inpatient services.

St. Elizabeths Hospital.—This famous hospital has recently celebrated the 100th anniversary of its founding. This hospital cares for 7,500 patients with virtually every known psychiatric and neurologic disorder. The George Washington University medical students begin their studies in psychiatry in their first year and these studies continue throughout the four years. Much of their clinical instruction in psychiatry and neurology is received at St. Elizabeths. Prominent psychiatrists and neurologists on the St. Elizabeths staff are members of the George Washington University School of Medicine faculty. Additional clinical experience in psychiatry and neurology is gained by students at the George Washington University Hospital Psychiatric Department and in the Outpatient Department of the University Hospital. Special lectures and clinical work in child psychiatry are given in the Psychiatric Department of Children's Hospital.

Mt. Alto Veterans Administration Hospital.—Clinical experience in both medical and surgical subjects is provided at this Veterans Administration hospital.

ADMISSION, REGISTRATION, FEES AND FINANCIAL REGULATIONS

Students in the School of Medicine are subject to, and are expected to familiarize themselves with, the regulations stated on pages 13–28.

Registration in the School of Medicine *is for a period of one academic year.* After the student has entered the courses of instruction he is obligated for the full tuition for the academic year. No part of the tuition will be refunded upon withdrawal or dismissal for any cause. Acceptance by the School of a student's fee does not in any way obligate the School to accept the student for any subsequent year, and the right is reserved to drop any student from the School whenever, in the interest of the student or the School, the Faculty deems it advisable to do so.

A fee of $10 to defray the costs of completing the records for final consideration for admission must accompany each application. This fee applies to students whose premedical training was completed at this University as well as to students who have not previously attended this University. Fees for each semester are $475, payable in advance.

The Committee on Admissions is guided in the selection of students by the applicant's academic ability, the results of the Medical College Admission Test, and personal qualifications as determined by letters of reference and personal interview. Applicants are interviewed only by invitation of the Committee.

Each applicant is notified as soon as possible after the Committee makes a decision.

An applicant who is offered a place in a class is required to notify the Director of Admissions within two weeks of his intent to accept the place reserved for him and to remit a deposit of $100 not later than

January 15th prior to the opening of classes of the academic year for which he applied. This deposit will not be refunded after January 15th. It will be credited toward the tuition for the first semester.

Credit for work will not be given until, at the completion of a laboratory course, the student has replaced or paid for all articles of equipment or other University property which he has lost, broken, or destroyed. All breakage or loss not directly traceable to an individual student is assessed pro rata.

COST OF TEXTBOOKS AND STUDENT EQUIPMENT

The minimum cost of necessary textbooks and student equipment (microscope, drawing materials, glass slides, clinical thermometer, stethoscope, hemocytometer, uniforms, etc.) is approximately as follows: first year, $400; second year, $250; third year, $125; fourth year, $80; total, $855.

A fee of $1 a semester is charged for the use (optional) of a locker.

REGULATIONS

Students in the School of Medicine are subject to, and are expected to familiarize themselves with, the general University regulations stated on pages 48–55.

ATTENDANCE

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required.

GRADES

The following grading system is used: *A* (90–100); *B* (80–89); *C* (75–79); *D* (65–74) condition; *E* (below 65) failure; *Inc.*, incomplete The passing grade in each subject is *C*.

A student who is conditioned in any subject will not be advanced until such condition is removed and then only by authority of the Committee on Scholarship.

EXAMINATIONS

Examinations, which may be written, oral, or practical, will be held at the end of each semester.

All students in the School of Medicine are required to take Part I and Part II of the National Board Examinations except that students from those states and foreign countries which do not recognize the National Board may be exempted from Part II by action of the Committee on Scholarship.

PHYSICAL EXAMINATIONS

All first-year students are given a comprehensive physical examination upon admission to the School of Medicine. The students are informed of the findings and advised regarding such measures as will tend to help them maintain a high standard of health.

In addition medical students benefit from the complete Tuberculosis Case Finding Program which the School has maintained since 1938–39. Under this program all students receive tuberculin tests, X-ray examinations, and such special attention from chest specialists as is necessary to reduce to a minimum the dangers from tuberculosis. Students are immunized against those diseases for which proven prophylactics exist.

THE DEGREE OF DOCTOR OF MEDICINE

Upon the satisfactory completion of the requirements of the School of Medicine, the degree of Doctor of Medicine is conferred.

Combined Arts and Medicine Curriculum

In order to be recommended for the degree of Bachelor of Arts, the candidate must complete at least 90 semester hours of prescribed college work (at least 30 hours and one year of residence must be completed in Columbian College, the senior liberal arts college), and the first year of the medical curriculum. Upon satisfactory completion of the fourth year of the medical curriculum the student becomes eligible for the degree of Doctor of Medicine.

REQUIREMENTS FOR THE DEGREE

Every candidate for graduation with the degree of Doctor of Medicine must be at least twenty-one years of age, of reputable character, and free of all indebtedness to the University. He must have satisfied the admission requirements, completed satisfactorily not less than four academic years of study as a matriculated student in Medicine, completed all required courses, and passed satisfactorily all prescribed examinations.

Honors

A candidate who has completed the four-year medical course with an average grade of 90 may be recommended for graduation "with distinction."

INTERN AND RESIDENT TRAINING PROGRAM

The George Washington University Hospital offers rotating-type internships as classified by the National Intern Matching Program, Inc.

Twenty-five internships of one year each are offered; fourteen in the Department of Medicine with emphasis on medicine, eleven in the Department of Surgery with emphasis on surgery, and two in the Department of Pathology with emphasis on Pathology.

Rotating Internships, Emphasis on Medicine.—Interns will be assigned to six months of general medicine, two months on the surgical service, and one month each on neuro-psychiatry, pediatrics, obstetrics and gynecology, and emergency.

Rotating Internships, Emphasis on Surgery.—Interns will be assigned to the surgical services for nine months, to general medicine for two months, and to obstetrics for one month.

Rotating Internships, Emphasis on Pathology.—Interns will be assigned to the pathology service for six months, to general medicine for two months, to surgery for two months, to pediatrics for one month, and to obstetrics for one month.

A total of approximately forty-two approved residencies are offered in anesthesiology, cardiac diseases, internal medicine, neurologic surgery, obstetrics-gynecology, oral surgery, pathology, physical medicine, psychiatry, roentgenology, surgery and thoracic surgery. Residency programs are of from one to four years depending upon the service. Appointments are for one year subject to renewal. In several of the fields there are affiliations with local and government hospitals.

Fellowships of one or two years are available to acceptable candidates in anesthesiology, cardiology, chest diseases, infectious diseases, outpatient service, physical medicine, rheumatic diseases, surgery and thoracic surgery.

For application blanks and further information, address the Medical Director, The George Washington University Hospital, Washington 7, D.C.

MEDICAL TECHNOLOGIST COURSE

The course for medical technologists consists of twelve consecutive months of didactic and practical work in all phases of clinical laboratory technique. The course meets the full requirements of the Registry of Medical Technologists of the American Society of Clinical Pathologists. Prerequisite: the Basic Course in Medical Technology offered by the Junior College of The George Washington University, or the equivalent.

Two classes are accepted each year, one entering in September and the other in March. Enrollment in each class is strictly limited so that personal instruction can be given.

Upon satisfactory completion of the course a certificate is awarded and the candidate is eligible for the certifying examination given by the Registry of Medical Technologists.

For application blanks and further information, address the Director of Laboratories, The George Washington University Hospital, Washington 7, D. C.

THE LAW SCHOOL

THE FACULTY AND STAFF OF INSTRUCTION*

————————, *Dean of the Law School*
Carville Dickinson Benson, A.B., LL.B., S.J.D., *Assistant Dean of the Law School*
Louis Harkey Mayo, B.S., LL.B., J.S.D., *Assistant Dean of the Law School*
David Benson Weaver, A.B., LL.B., *Director of Continuing Legal Education*

William Thomas Fryer, A.B., LL.B., J.D., *Professor of Law*
Carville Dickinson Benson, A.B., LL.B., S.J.D., *Professor of Law*
James Forrester Davison, A.B., LL.B., LL.M., S.J.D., *Professor of Law*
Oswald Symister Colclough, B.S., LL.B., LL.D., *Professor of Law*
Herman Israel Orentlicher, A.B., LL.B., *Professor of Law*
†Leroy Sorenson Merrifield, A.B., LL.B., M.P.A., S.J.D., *Professor of Law*
Orville Hassler Walburn, A.B., LL.B., J.D., *Professor of Law*
David Benson Weaver, A.B., LL.B., *Professor of Law*
Louis Harkey Mayo, B.S., LL.B., J.S.D., *Professor of Law*
Glen Earl Weston, B.S., LL.B., *Professor of Law*
John Wingfield Jackson, B.S., LL.B., *Adjunct Professor of Law*
Frank Hammett Myers, LL.B., LL.M., *Adjunct Professor of Law*
John Albert McIntire, A.B., LL.B., LL.D., *Professorial Lecturer in Law*
Justin Lincoln Edgerton, A.B., LL.B., *Professorial Lecturer in Law*
Philip Field Herrick, A.B., LL.B., LL.M., *Professorial Lecturer in Law*
George Edward Monk, A.B., LL.B., LL.M., *Professorial Lecturer in Law*
Charles James Zinn, A.B., LL.B., LL.M., S.J.D., *Professorial Lecturer in Law*
Joseph Dach, LL.D., LL.B., *Professorial Lecturer in Law*
Louis James Harris, A.B., LL.B., S.J.D., LL.M., *Professorial Lecturer in Law*
John Joseph Czyzak, A.M., LL.B., *Professorial Lecturer in Law*
Leonard Patrick Walsh, A.B., LL.B., *Professorial Lecturer in Law*
Robert McKinney Cooper, Ph.M., J.D., *Associate Professor of Law*

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* The President of the University, the Dean of Faculties, the Dean and Assistant Deans of the School, the Registrar of the University, the Director of Admissions of the University, the Professors, Adjunct Professors, Associate Professors, and Assistant Professors constitute the Faculty.

† On sabbatical leave spring semester 1958–59.

William Thomas Mallison, Jr., A.B., LL.B., *Associate Professor of Law*
Robert Galloway Dixon, Jr., Ph.D., LL.B., *Associate Professor of Law*
Jackson Reid Hambrick, A.B., LL.B., *Associate Professor of Law*
Milton Paul Kroll, A.B., LL.B., *Associate Professorial Lecturer in Law*
Paul Archibald Rose, LL.B., *Associate Professorial Lecturer in Law*
George Nelson Robillard, B.S., LL.B., *Associate Professorial Lecturer in Law*
Gust Angelo Ledakis, B.B.A., LL.B., *Assistant Professor of Law*
Raymond Warren Young, Ph.D., J.D., *Assistant Professor of Law*
Crombie James Dickinson Garrett, A.B., LL.B., *Lecturer in Law*
William Woolcott Goodrich, LL.B., *Lecturer in Law*
Vincent Kleinfeld, LL.B., *Lecturer in Law*
Herbert Joseph Liebesny, J.D., *Lecturer in Law*
Carl Clell Davis, B.S., LL.B., LL.M., *Lecturer in Law*
Thomas Hayward Brown, *Lecturer in Law*
Pasquale Joseph Federico, A.M., LL.B., *Lecturer in Law*
George Joseph Goldsborough, B.S., J.D., *Lecturer in Law*
Abe Krash, A.B., J.D., *Lecturer in Law*
Samuel Joseph L'Hommedieu, Jr., B.S., LL.B., LL.M., *Lecturer in Law*
John Alexander Kendrick, A.B., LL.B., *Clerk of the Trial Practice Court*
Dudley Graham Skinker, LL.B., *Associate Clerk of the Trial Practice Court*

COMMITTEES*

The Dean's Council

William Thomas Fryer
James Forrester Davison
Herman Israel Orentlicher
Carville Dickinson Benson
Leroy Sorenson Merrifield
Robert McKinney Cooper

Committee on Admissions

Carville Dickinson Benson, *Chairman*
Louis Harkey Mayo
Edward Andrew Potts, *Ex Officio*

Committee on Graduate Studies

James Forrester Davison, *Chairman*
Leroy Sorenson Merrifield
Robert McKinney Cooper
Louis Harkey Mayo

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* The Dean of Faculties and the Dean and Assistant Deans of the Law School are members ex officio of all committees.

COMMITTEE ON SCHOLARSHIP

Orville Hassler Walburn, *Chairman*
Carville Dickinson Benson
Louis Harkey Mayo
Edward Andrew Potts, *Ex Officio*

COMMITTEE ON CURRICULUM

Herman Israel Orentlicher, *Chairman*
William Thomas Fryer
James Forrester Davison
Louis Harkey Mayo
Robert McKinney Cooper

LIBRARY COMMITTEE

Robert Galloway Dixon, Jr., *Chairman*
Jackson Reid Hambrick
Gust Angelo Ledakis
Raymond Warren Young

GENERAL INFORMATION

LOCATION IN THE NATION'S CAPITAL

The George Washington University Law School, now in its 93d year, is the oldest law school in the District of Columbia. The School took part as a charter member in 1900 in the organization of the Association of American Law Schools and it has been an active member of the Association since that time. It is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association.

National University, which has had an important place in legal education in the District of Columbia since 1869, was merged into The George Washington University in August 1954.

Of special significance is the location of the Law School in the Nation's Capital, the focal point of the law in action, both American and international. The work of the School goes on in this environment, presenting a unique opportunity for observation and study of federal agencies—judicial, legislative, and administrative.

The years of residence at law school are years of participation in the life of the community, which in the case of the George Washington University Law School, is the government of the United States by law. As a consequence, the study of law takes on added meaning, whether the goal be government service or practice, general or specialized.

OBJECTIVES

The primary purpose of the Law School is to prepare men and women to meet the needs of society in the many fields of law, public and private.

These needs call not only for technical skill but also for responsible leadership in the development of the law and the administration of justice. In fulfilling these responsibilities the Law School offers: (1) a program of study in preparation for the practice of law; (2) programs of study and research on the graduate level for foreign as well as for American students; (3) a continuing legal education program for members of the bar; (4) institutes and forums on current topics in domestic and foreign law; (5) the publication of a law journal containing the results of research in public law; and (6) the encouragement of student professional co-curricular activities.

PROGRAMS OF STUDY

Traditionally the Law School has been national in the geographic distribution of its students. At the present time, men and women holding baccalaureate degrees from more than three hundred colleges and universities come from the forty-eight states, the territories, and several foreign countries to comprise the student body. As a consequence the programs of study leading to the degrees of Bachelor of Laws and Juris Doctor have been planned to provide instruction and training for the practice of law wherever the Anglo-American legal system obtains.

Graduate work leading to the degrees of Master of Laws and Doctor of Juridical Science is offered for those desiring further study and research in specialized fields of law.

Provision is made for advanced study by members of the bar who do not desire to register as candidates for degrees. Lawyers may take courses for this purpose either as unclassified graduate students or as continuing legal education students.

Graduate work is offered also to meet the needs of lawyers who come from countries whose legal systems are not based on the English law. There are two programs of study, one leading to the degree of Master of Comparative Law for lawyers planning to return to their own countries, and the other leading to the degree of Master of Comparative Law (American Practice) for lawyers planning to remain in this country for the practice of law.

ORGANIZATION OF THE CURRICULUM

The curriculum is organized so that students may enter the Law School at the beginning of the fall or spring semester of the academic year, or at the beginning of the summer term.

MORNING AND EVENING DIVISIONS

Morning classes, other than Trial Practice Court, meet for fifty-minute periods between 9:10 A.M. and 1:00 P.M., Monday through

Friday; Trial Practice Court meets for a two-hour period from 9:30 to 11:30 A.M. on Saturday

Evening classes meet for two fifty-minute periods from 5:50 to 7:40 P.M., Monday through Friday. A four-credit course, e.g., Torts, meets two evenings a week; a two-credit course, e.g., Personal Property, meets one evening a week. The evening division conforms to the standards of the morning division and has the same teaching staff.

THE LIBRARY

The Law Library of 52,700 volumes contains the official reports of the decisions of the courts of last resort of all states prior to the National Reporter System, and of some states complete to date; the National Reporter System, complete; the reports of the United States Supreme Court and lower Federal courts, and the reports of federal administrative agencies; Shepard's Citations for the units of the Reporter System; the English Reports, Full Reprint; the English Law Reports; the Times Law Reports; the Dominion Law Reports; the United States statutes and codes; complete sets of statutes of all the states; the English statutes; the principal English and American digests and encyclopedias; collections of special reports and annotated cases; United Nations documents; leading textbooks and treatises; and practically complete sets of about 150 legal periodicals. A section of the library, consisting of books acquired from National University, is known as the National University Law Collection.

The international law collection, formerly the library of the Carnegie Endowment for International Peace, is available to law students.

The Library, which is on the fourth floor of Stockton Hall, is open from 9:00 A.M. to 10:00 P.M., Monday through Friday; from 9:00 A.M. to 5:00 P.M. on Saturday; and from 2:00 to 6:00 P.M. on Sunday. Books and other materials do not circulate and must be used in the library.

THE LAW REVIEW

The George Washington Law Review, published by the University, is edited and managed by students of the Law School under the supervision of faculty advisers. It is devoted exclusively to state and federal public law. The location of the University in the National Capital, where the primary sources of federal public law may be observed in operation, affords an unexcelled opportunity for specialization in this field.

The *Review* organization includes a faculty editor-in-chief, an associate faculty editor, a faculty board of advisory editors, a board of departmental advisory editors, and a board of student editors. The student editors are chosen each year on the basis of scholarship.

THE STUDENT BAR ASSOCIATION

Every student in the Law School is a member of the Student Bar Association, which is organized to enable students to become better acquainted with problems of the profession, to foster professional ideals, and to bring about closer contact with members of the profession engaged in active practice of the law.

The work of the Student Bar Association is carried on by various committees and by group and general meetings of a professional and social nature. From time to time lectures are given by outstanding authorities on legal and professional problems.

An important activity is the Van Vleck Case Club Competition, which provides an opportunity for training in appellate advocacy. First and second year students participate as contestants before courts composed of members of the Faculty and the local bar. Senior law students of the Case Club also sit as judges. The final argument is held before a court composed of distinguished federal judges.

ORDER OF THE COIF

The Order of the Coif, a national honor society with chapters in over forty law schools, aims "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." The George Washington University Chapter was established in 1926. Members are elected each year from the highest-ranking 10 per cent of the graduating class of the Law School.

REGULATIONS

Students in the Law School are subject to, and are expected to familiarize themselves with, the following regulations and the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *stated on pages 13–28, and the University regulations stated on pages 48–55.*

Students without substantial outside employment may take a program of studies of 14 hours a week. Such students may take courses in the evening only if they are not available in the morning and if a majority of the hours taken are in morning courses. Students, whether in the morning or evening division, with substantial outside employment must take a limited program of studies not exceeding 10 hours a week. Students taking a majority of their classes in the evening may not take more than 10 hours a week. A minimum schedule of 10 hours in the morning division and 6 hours in the evening division is required except in exceptional circumstances when, as to continuing students, a reduced program is authorized by the Dean.

ATTENDANCE

Regular attendance at classes is required and is necessary for successful work. A student who is deficient in class attendance in any course may be barred from taking the examination.

RESIDENCE REQUIREMENTS

Candidates for the degree of Bachelor of Laws must complete a residence period of three academic years. Attendance in the morning division for the fall and spring semesters constitutes residence for an academic year; similar attendance in the evening division constitutes residence for three-fourths of an academic year. Consequently, a morning student must attend six semesters to meet residence requirements; an evening student must attend eight. Students authorized to take schedules of less than 10 hours in the morning division or less than 6 hours in the evening division receive residence credit on a proportional basis. Students who attend the summer sessions receive fractional residence credit.

Students planning to attend summer school sessions at other law schools and desiring to use credits obtained at such schools in their course at this Law School must first have the courses they wish to take approved by the Dean. In no event will credits be recognized in excess of those which might be obtained in a similar period in this School.

EXAMINATIONS

Written examinations are held at the end of each course. Every student is required to take the regular examinations unless excused. No excuse for absence will be granted except by the Dean and then only for illness or other emergency. Application for excuse must be made in writing not later than one month after the date of the examination. A grade of *NG* (no grade) will be entered on the record of a student thus excused, and he may take the next regularly scheduled examination in the course for which the excuse has been granted.

No special examinations will be given; except that, upon written application to the Dean, showing sufficient cause, a candidate for a degree at a convocation before the next regular examination, if he would be entitled to take a postponed examination, may, at the discretion of the Faculty, be given a special examination.

If a student fails to take an examination, a grade of *F* (to be counted as zero) will be recorded unless he has been excused from the examination as provided above or has obtained the Dean's permission to drop the course according to regulations on page 50.

GRADES

Grades are indicated by the Letters *A*, excellent, 85–100; *B*, good, 75–84; *C*, satisfactory, 65–74; *D*, poor, 55–64—below standard for graduation; *F*, failed—below 55; and *NG*, no grade—student excused for failure to take regularly scheduled examination. See "Examinations" above, for grade upon failure to take an examination. The grades *A*, *B*, *C*, and *D* mean that the work has been completed and credit given for the courses. *F*, failed, means that no credit will be given. To obtain credit the student must repeat the course, except that a student who has obtained an average of *C* in the work of the semester just completed and the preceding semester and received a grade of *F* in only one course during those semesters may, with the consent of the Faculty, take the next regular examination in that course if he has not been excluded previously for low scholarship. If the failure occurs in the first semester, the succeeding semester is used as the second semester. The privilege is limited to taking the next regular examination, except that a candidate for a degree at a convocation before the next regular examination may be permitted to take a special examination at the end of the next semester. If on the reexamination the student receives a passing grade he will be given credit in the course. Both grades are recorded.

EXCLUSION AND PROBATION FOR POOR SCHOLARSHIP

Candidates for the Degrees of Bachelor of Laws and Juris Doctor.—A student who in one semester, or two successive semesters, fails in courses aggregating 8 or more semester hours will be excluded, except that if currently registered he will be permitted to complete the work of the semester. Such a student is not eligible thereafter to be registered in the Law School or to attend classes. While excluded he may, however, with the consent of the Faculty, be admitted to the next regular examinations in those courses in which he has made a grade below passing, and if he receives a grade of passing in those courses with an average sufficient to make his cumulative average not less than *C*, he will be reinstated.

A student not subject to exclusion under the foregoing rule who at any time fails to maintain a cumulative average of at least *C* will be placed on probation. A student on probation may at the discretion of the Dean be required to reduce his program of study. If a student on probation does not, by the end of the second semester following that in which his average has fallen below *C*, receive grades sufficient to give him a cumulative average of at least *C*, he will be excluded.

The cumulative average of a student includes all the grades in all the courses taken while he is in the Law School as a candidate for a particular degree. When a course is repeated or a reexamination is taken, both the first grade and the subsequent grade or grades are counted in the cumulative average.

In special cases in which a student who has been excluded can clearly demonstrate that his low grades were due to special circumstances beyond his control and that he has the capacity to pursue the study of law with a definite likelihood of success, such student may be readmitted by the Faculty subject to such conditions as the Faculty may impose.

Candidates for Graduate Degrees.—A candidate for one of the graduate degrees whose work is not satisfactory in the opinion of the Faculty, taking into consideration the requirements and standards for the degree, may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

Unclassified Students.—An unclassified student whose work is not satisfactory in the opinion of the Faculty may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

Classification of Students

Candidates for the degree of Bachelor of Laws are divided into classes on the completion of semester hours as follows: first year, one through twenty-eight; second year, twenty-nine through fifty-six; third year, fifty-seven or more. Unclassified Students, see page 19.

THE DEGREES OF BACHELOR OF LAWS AND JURIS DOCTOR

The programs of study leading to the degrees of Bachelor of Laws and Juris Doctor are addressed to the development and application of legal principles, skills, and ideals which are indispensable to the equipment of a lawyer for professional responsibility and leadership in modern society. They include, first and foremost, the traditional core of legal education, namely, the study of legal materials—judicial, statutory, and administrative—and instruction in the technique of their use. These programs include the study of the nature and purpose of law, the history of the Anglo-American legal system, and the history and standards of the legal profession; practice in the skills of legal research and legal writing; elementary training in trial practice; and, through the medium of seminars, experience in group handling of legal problems.

REQUIREMENTS FOR THE DEGREES

Bachelor of Laws

To be recommended for the degree of Bachelor of Laws (LL.B.) the student must have completed a residence period of not less than three academic years (four years for evening students) and 80 semester hours, with a cumulative average of at least *C*. At least one academic year of residence and 28 semester hours are required of students admitted with advanced standing. Credits allowed by way of advanced standing are not included in computing the average required for graduation.

JURIS DOCTOR

The degree of Juris Doctor (J.D.) is conferred as a recognition of the completion at the George Washington University Law School, with high rank, of the required program of study for the Bachelor's degree, including experience in research and legal authorship. To be recommended for this degree the student must have completed: (1) a residence period of not less than three academic years (four years for evening students); (2) eighty semester hours with a cumulative average of at least *B* including one of the following courses: Comparative Law, Jurisprudence, or one of the graduate seminars; and (3) one year of acceptable service on the board of student editors of *The George Washington Law Review*, election to which is subject to regulations laid down by the Faculty. All requirements for the degree must be completed at this Law School.

HONORS

The degree of Bachelor of Laws or of Juris Doctor "with distinction" will be awarded students who obtain a cumulative average of *A*.

CURRICULUM

Required and Elective Courses.—A program of required and elective courses has been developed in order to assure coverage of the basic courses as well as to allow a degree of flexibility to meet the diverse interests of students. All first-year courses, three second-year courses, and one third-year course are required, leaving a total of thirty-eight hours of electives. In general, second-year students are restricted to second-year electives but in appropriate cases the taking of third-year electives will be approved. Similarly, specially qualified third-year students may secure approval to take graduate courses and research in public law.

Practice and Trial Practice Court.—Classroom instruction is conducted in pleading and procedure, trial and appellate practice, and evidence. This instruction includes grounding in the principles of the Federal Rules of Civil Procedure and the Federal Rules of Criminal Procedure. In addition, each senior student is required to participate in the work of the Trial Practice Court, which includes the trying of cases as junior counsel and as senior counsel. A special section of the court is devoted exclusively to the trial of patent cases. Experience in preparing and arguing appellate court cases is available through the Case Club Competition.

Patent Law.—Students interested in patent law should take the following group of courses: Unfair Trade Practices, Patent Law I and II, Patent Office Practice, Patent Trial Practice Court, Federal Antitrust Laws, and Trade Regulation Seminar.

Curriculum.—Following is the curriculum for students beginning in the fall semester. Adjustments are made to meet the needs of students beginning in the spring semester and in the summer.

MORNING DIVISION

FIRST YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Contracts I	4	Agency	2
Legal Method and Legal System	4	Constitutional Law	4
Personal Property	2	Contracts II	2
Torts	4	Criminal Law and Procedure	4
		Real Property	2
Total	14	Total	14

SECOND YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Civil Procedure	4	Evidence	4
Conveyances	2	Electives	10
Electives	8		
Total	14	Total	14

THIRD YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Trial Practice Court	2	Trial Practice Court	2
Electives	10	Electives	10
Total	12	Total	12

EVENING DIVISION

FIRST YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Contracts I	4	Contracts II	2
Legal Method and Legal System	4	Criminal Law and Procedure	4
Personal Property	2	Torts	4
Total	10	Total	10

SECOND YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Agency	2	Constitutional Law	4
Civil Procedure	4	Conveyances	2
Real Property	2	Electives	4
Elective	2		
Total	10	Total	10

THIRD YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Electives	10	Evidence	4
		Electives	6
Total	10	Total	10

FOURTH YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Trial Practice Court	2	Trial Practice Court	2
Electives	8	Electives	8
Total	10	Total	10

GRADUATE PROGRAM

Degrees of Master of Laws and Doctor of Juridical Science

The administration of justice under law is a matter so vast and complex that some graduates feel the need for further study in order to broaden and deepen their understanding of the law. Others wish to extend their study into rapidly developing specialized fields. Graduate instruction, leading to the degree of Master of Laws, is therefore offered to enable qualified students to attain one or both of these objectives.

The degree of Doctor of Juridical Science is offered for selected students whose aim is to extend still further their studies by pursuing original research in law.

Graduate work is available to evening as well as morning students in order that lawyers in private practice and in government service may engage in advanced study or in original research.

Programs of Study for Foreign Lawyers

Two programs of study are provided to meet the needs of lawyers who come from countries whose legal systems are not based on the English law. For such lawyers, whose aim is to acquire an understanding of our system so that they may work intelligently with its materials and practitioners after returning to their own countries, there is available the degree of Master of Comparative Law. For foreign lawyers, however, who wish to practice in a common law jurisdiction there is available the degree of Master of Comparative Law (American Practice) with an appropriate program of study. With respect to both programs, the students are not assigned to special classes but work in association with the other students in the regular courses, each student's program being adapted to his individual needs.

NONDEGREE STUDY: CONTINUING LEGAL EDUCATION

As a result of changes and expansion in various fields of the law many lawyers pursue graduate study in order to keep abreast of current developments. Consequently, an important part of the graduate program is to provide for members of the bar not desirous of becoming degree candidates. The offerings in the field of governmental regulation provide opportunities for specialization. Although third-year and graduate courses are particularly suitable, first-year and second-year courses may be taken in appropriate cases. Members of the bar taking graduate work in this way register as unclassified students or as continuing legal education students.

RESEARCH IN PUBLIC LAW

Research in public law is conducted under the supervision of members of the Faculty. The purpose of this research is to furnish means for training specialists in public law, either as government lawyers or as lawyers representing individuals or corporations in cases in which the Government is a party, and to assist in the analysis, clarification, formulation, and improvement of public law, substantive and procedural.

Candidates for the graduate degrees in the Law School and specially qualified seniors may pursue this work.

REQUIREMENTS FOR THE DEGREES

MASTER OF LAWS

To be recommended for the degree of Master of Laws (LL.M.) the student must have completed a residence period of not less than two semesters. Such residence should normally be continuous. All requirements for the degree must be completed in this Law School and in a period not exceeding two years after registration for work for the degree. The student must have completed, with a minimum average of *B*, 20 semester hours in courses listed in the law curriculum as graduate courses except that in appropriate cases third-year courses may be approved for inclusion in the program of study if not previously taken.

Master of Comparative Law

The degree of Master of Comparative Law (M.Comp.L.) is for foreign students who intend to return to their countries. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed satisfactorily 24 semester hours in approved courses in the curriculum of the Law School or of such other departments of the University as the Faculty of the Law School shall approve.

Master of Comparative Law (American Practice)

The degree of Master of Comparative Law, American Practice (M.Comp.L.(Am.Prac.)) is for foreign students who intend to remain in this country. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed 28 semester hours in approved courses in the curriculum of the Law School with a cumulative average of at least *C*.

Doctor of Juridical Science

To be recommended for the degree of Doctor of Juridical Science (S.J.D.) the student must have completed a residence period of not less than one academic year. He must have pursued a course of study and research designated by his consultative committee and approved by the Committee on Graduate Studies. At the conclusion of his first year of residence, or at such other time as the Committee on Graduate Studies may set, the candidate must pass an oral examination in those fields of study selected by the consultative committee. This examination shall be conducted by the consultative committee and such other members of the Faculty and qualified experts as may be selected by the Committee on Graduate Studies.

Not later than the date specified in the University calendar the candidate must submit to the Dean one typewritten original and two legible and complete carbon copies of his dissertation in its final form. The dissertation must contain a summary of from 2,500 to 3,000 words inserted as an appendix. An additional original typewritten copy of this summary must be submitted for publication. To be acceptable the dissertation must, in the opinion of the examining committee, constitute a substantial contribution to the field of law concerned and be suitable for publication. Additional information will be supplied by the Chairman of the Committee on Graduate Studies.

The summaries of accepted dissertations will be printed in a volume forming a number of the University Bulletin. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

THE SCHOOL OF ENGINEERING

THE FACULTY AND STAFF OF INSTRUCTION*

Martin Alexander Mason, B.S. in Eng., Ing.Dr., *Dean of the School of Engineering*

Carl Hugo Walther, B.E., M.C.E., *Assistant Dean in the School of Engineering*

Jack Edward Walters, M.S. in M.E., Ph.D., *Director, Engineering Administration Program*

Norman Bruce Ames, LL.B., E.E., M.S. in E.E., Dr. sc. techn., *Professor of Electrical Engineering*

Florence Marie Mears, Ph.D., *Professor of Mathematics*

Charles Rudolph Naeser, Ph.D., *Professor of Chemistry*

Carl Hugo Walther, B.E., M.C.E., *Professor of Civil Engineering*

Martin Alexander Mason, B.S. in Eng., Ing.-Dr., *Professor of Civil Engineering*

Jack Edward Walters, M.S. in M.E., Ph.D., *Professor of Engineering Administration*

Robert Aaron Hechtman, M.S. in C.E., Ph.D., *Professor of Civil Engineering*

Lewis Slack, Ph.D., *Professor of Physics*

Robert Hamilton Moore, Ph.D., *Professor of English Composition*

Ernest Frank, B.E.E., M.S. in E.E., Ph.D., *Professor of Electrical Engineering*

Forest Klaire Harris, Ph.D., *Professorial Lecturer in Electrical Engineering*

Waldo Edward Smith, B.E. in C.E., M.S. in C.E., *Professorial Lecturer in Civil Engineering*

Gilbert Chester Jacobus, B.S. in C.E., M.B.A., LL.B., *Professorial Lecturer in Engineering Administration*

Kenneth Frederick McClure, M.S., LL.B., *Professorial Lecturer on Commercial Law*

Nathaniel Stewart, M.S., Ed.D., *Professorial Lecturer in Engineering Administration*

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[*] The President of the University, the Dean of Faculties, the Dean and the Assistant Dean of the School, the Registrar of the University, the Director of Admissions of the University, Professors, Associate Professors, Assistant Professors, and Instructors constitute the Faculty.

Thomas Phillip Liverman. Ph.D., *Professorial Lecturer in Electrical Engineering*

Frank Miller Reynolds, LL.M., B.S., *Professorial Lecturer in Engineering Administration*

Robert James Wilson, A.M., Ed.D., *Professorial Lecturer in Engineering Administration*

Franklin Porter Hall, Ph.D., *Professorial Lecturer in Engineering Administration*

Keith Cyril Harder, Ph.D., *Professorial Lecturer in Engineering Administration*

Melvin Raymond Meyerson, M.S. in Met.E., *Professorial Lecturer in Civil Engineering*

Burton Bryant Chandler, M.B.A., *Professorial Lecturer in Engineering Administration*

Kenneth Seymour Colmen, B.A.E., Ph.D., *Professorial Lecturer in Engineering Administration*

Frederick Charles Dyer, M.B.A., *Professorial Lecturer in Engineering Administration*

Ralph Edward Fuhrman, B.S. in C.E., M.S. in Eng., D. Eng., *Professorial Lecturer in Civil Engineering*

Alvin Loewer, Jr., B.E., Dr.Eng., *Professorial Lecturer in Civil Engineering*

Robert Irving Sarbacher, Sc.D., E.E., *Professorial Lecturer in Electrical Engineering*

Charles Henry Conrad, B.S. in Arch., *Professorial Lecturer in Civil Engineering*

*Raymond Pugh Eyman, C.E., *Associate Professor of Civil Engineering*

John Kaye, M.S. in M.E., *Associate Professor of Engineering Administration*

Paul Arthur Crafton, B.M.E., Ph.D., *Associate Professor of Mechanical Engineering*

Boone Doudy Tillett, LL.B., M.S., Sc.D., *Associate Professor of Engineering Administration*

George Calvin Weaver, M.S., *Associate Professor of Mechanical Engineering*

Louis Depian, Ph.D., *Associate Professor of Electrical Engineering*

David Gover White, B.Chem.Eng., Ph.D., *Associate Professor of Chemistry*

Harold Jefferson Mills, Jr., M.B.A., *Associate Professor of Engineering Administration*

Nelson Thomas Grisamore, Ph.D., *Associate Professor of Electrical Engineering* oseph Lambert Intermaggio, M.R.P., *Associate Professorial Lecturer in Civil Engineering*

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* On limited service.

hilip Sidney Morgan, Jr., B.S., M.S. in M.E., *Assistant Professor of Mechanical Engineering*

obert Steven Ledley, D.D.S., A.M., *Assistant Professor of Electrical Engineering*

lbert Christian Murdaugh, B.S., M.S. in Met.E., *Assistant Professor of Mechanical Engineering*

wight Edward Shytle, *Lecturer in Electrical Engineering*

ermit Milton Lovewell, B.S. in E.E., *Lecturer in Electrical Engineering*

eorge Abraham, M.S., *Lecturer in Electrical Engineering*

Villiam Walter Balwanz, B.E.E., M.S. in E.E., *Lecturer in Electrical Engineering*

eorge Pida, B.E.E., *Lecturer in Electrical Engineering*

obert William Pinnes, M.M.E., *Lecturer in Mechanical Engineering*

Villiam Alderson, M.S. in E.E., *Lecturer in Electrical Engineering*

helton Mann Gay, Jr., M.S., *Lecturer in Civil Engineering*

ving Korobkin, B.M.E., M.S. in M.E., *Lecturer in Mechanical Engineering*

eorge Joseph O'Hara, M.S. in C.E., *Lecturer in Civil Engineering*

artin Garstens, M.S., Sc.D., *Lecturer in Engineering*

Villiam Courtney Schnobrich, M.S. in C.E., *Lecturer in Civil Engineering*

obert Charles Smith, M.S. in M.E., *Lecturer in Civil Engineering*

aphael David Cahn, B.M.E., *Lecturer in Mechanical Engineering*

Villiam Herbert Gossard, A.B., M.S. in E.E., *Lecturer in Electrical Engineering*

eph Elias Guidry, B.E., M.S. in E.E., *Lecturer in Electrical Engineering*

mes Milton Headrick, M.S., *Lecturer in Electrical Engineering*

rshon Kulin, M.S., Sc.D., *Lecturer in Civil Engineering*

ank Joseph Powell, M.S., *Lecturer in Mechanical Engineering*

eldon Norman Salzman, M.S., *Lecturer in Civil Engineering*

ter Hans Sawitz, M.S. in E.E., *Lecturer in Electrical Engineering*

uis Samuel Rotolo, B.S. in E.E., *Lecturer in Electrical Engineering*

ewellyn Adam Rubin, B.S. in E.E., *Instructor in Electrical Engineering*

ely Forsythe Jones Matthews, B.S.E., *Instructor in Electrical Engineering*

s Shanley Straw, B.S. in C.E., *Associate in Mechanical Engineering*

rrill Conway Rohlfs, B.E.E., *Associate in Electrical Engineering*

COMMITTEES *

The Dean's Council †

1959
Jack Edward Walters
Lewis Slack

1960
Ernest Frank
Paul Arthur Crafton

1961
Charles Rudolph Naeser
Robert Aaron Hechtman

Committee on Admission and Advanced Standing

Carl Hugo Walther, *Chairman*
Raymond Pugh Eyman
Nelson Thomas Grisamore
Philip Sidney Morgan, Jr.

Committee on Scholarship

Carl Hugo Walther, *Chairman*
Robert Aaron Hechtman
Ernest Frank
David Grover White

Committee on Graduate Studies

Ernest Frank, *Chairman*
Robert Aaron Hechtman
Lewis Slack
Louis Depian
John Kaye
Paul Arthur Crafton
Keith Harder (Liaison Member)
Ronald J. Wylde (Liaison Member)

Committee on Research

Robert Aaron Hechtman, *Chairman*
Paul Arthur Crafton
Nelson Thomas Grisamore

THE ADVISORY COUNCIL

ALLEN VARLEY ASTIN, Ph.D.
Director of the National Bureau of Standards

LYMAN JAMES BRIGGS, Ph.D., Sc.D., LL.D.
Trustee of the University

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* The Dean and the Assistant Dean of the School of Engineering are members ex officio of all committees.

† Elected by the Faculty.

UGH LATIMER DRYDEN, Ph.D., Sc.D., D.Eng.
Vice-President of Research of the National Advisory Committee for Aeronautics

ALPH LEON GOETZENBERGER, B.S., E.E.
Educational Consultant, Minneapolis-Honeywell Regulator Company

ANIEL CHARLES WALSER, B.S.
Consulting Engineer; Former *Chairman of the District of Columbia Board of Registration for Professional Engineers*

The Council is made up of friends of the University who are intimately amiliar with the educational needs of the professional community erved by the School. The Council is advisory to the Dean of the School f Engineering; it serves the function of relating the School to the educaonal requirements of the engineering and scientific constituency served y the School.

GENERAL INFORMATION

INTRODUCTORY

The School of Engineering was organized in 1884 as the Corcoran ientific School. In 1903 that school was combined with Columbian ollege in the Department of Arts and Sciences. In 1905 the engineerg courses were placed under an administrative organization known as e Washington College of Engineering, and in 1909 the name was anged to the College of Engineering and Mechanic Arts. In 1914 the me became the School of Engineering.

Curricula leading to the degrees of Bachelor of Civil Engineering, achelor of Mechanical Engineering, and Bachelor of Electrical Engiering are accredited by the Engineers' Council for Professional Delopment, the recognized accrediting body of the engineering profession.

OBJECTIVE

The objective of the School of Engineering is to produce graduates ho possess knowledge and understanding of the fundamental scientific inciples in their fields of study; some skill in their application; and an titude of responsibility toward society and the engineering profession.

PROGRAMS OF STUDY

Programs of undergraduate study are offered leading to the degrees f Bachelor of Civil Engineering, Bachelor of Electrical Engineering, achelor of Mechanical Engineering, and Bachelor of Science in Engiering (with optional areas of concentration).

Graduate work is offered under the supervision of the Committee on aduate Studies, leading to the degrees of Master of Science in Engiering and Master of Engineering Administration.

ADVISORY SYSTEM

Every student entering the School of Engineering as an undergraduate degree candidate is assigned a permanent Faculty adviser—for the purpose of guiding the educational career of the student, providing assistance in his professional development as an engineer, establishing close relations between the Faculty and the student, and furnishing counsel and advice in all phases of the academic career of the student.

Faculty advisers counsel students on their programs of study, the achievement and maintenance of satisfactory scholastic performance, professional development, extracurricular activity as part of the educational process; and assist the entering student in orientation in the engineering discipline. The adviser represents the student in all cases requiring Faculty action.

Students who have not completed 70 semester hours satisfactorily are required to obtain their advisers' approval of programs of study prior to registration.

A student who has not completed the course work specified for the freshman and sophomore years is required to consult his adviser when so directed by the Dean, and to follow the recommendations of his adviser in all academic matters. However, advisers may not deny a student entry into any course or activity to which he is entitled under the regulations of the School of Engineering. Students having junior or senior status are encouraged to consult their advisers. The Dean acts as temporary adviser to entering or transfer students pending assignment of their permanent advisers.

All students are encouraged to discuss college problems with their advisers or instructors at any time; and parents or guardians are invited to consult with the Dean and advisers, concerning any student problems.

Faculty advisers discharge their counseling duties in accordance with the high principles of their professional responsibility; however, the final responsibility for a student's action lies wholly with the student.

REGULATIONS

Students in the School of Engineering are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *stated on pages 13–28, and the University regulations stated on pages 48–55.*

AMOUNT OF WORK

A full-time undergraduate student who is not on probation may take not more than 20 semester hours. A student employed more than 24 hours a week, who is not on probation, may take not more than 10 semester hours.

A student previously unemployed who accepts employment subsequent to registration or at any time during a semester is required to report that fact immediately to the Dean, in order that adjustments in schedule may be made, if necessary, to bring his program within the Faculty's limitations upon the amount of work to be carried by an employed student.

ATTENDANCE

The student is expected to attend every meeting of the course in which he is registered, fully prepared to carry on the work required. The student is held responsible for all work in the course, and all absences must be excused before provision will be made for him to make up the work missed. Excuses for absences from examinations which have been announced in advance can be obtained only by making written application to the instructor in charge of the course.

CHANGES IN PROGRAM OF STUDIES

In addition to the general University regulations on pages 48–55, the following regulations apply to students in the School of Engineering:

During the seven days following the first day of classes of a semester, additional courses may be added to the student's program with the approval of the instructor, the student's adviser, and the Dean.

During the thirty-five days following the first day of classes of a semester, courses may be dropped from a student's program, with the approval of the student's adviser and the Dean, and without academic penalty. Withdrawal from a course without the approval of the student's adviser entails a penalty of failure in the course.

Withdrawal from a course or from the University, without academic penalty, may be authorized by the Dean at any time upon presentation of written evidence of extenuating circumstances.

Unauthorized withdrawal from a course at any time entails a penalty of failure in the course and financial responsibility for the full fee for the course.

HONORS LIST

The Faculty of the School of Engineering recognizes meritorious scholastic achievement by an Honors List, containing in alphabetical order the names of candidates for undergraduate degrees in engineering, whose scholastic achievement satisfies all of the following requirements:

1. The candidate's cumulative quality-point index is equal to or exceeds 3.00.

2. At least thirty semester hours of credit have been earned while a degree candidate in this School of Engineering.

3. At least fifteen (part-time student), or thirty (full-time student), semester hours of credit in an engineering degree curriculum have been earned in the two semesters immediately preceding the award.

4. No grade below *C* has been received during the qualifying period stated above.

5. No disciplinary action has been taken in respect to the student.

The Honors List is prepared at the end of the fall and spring semesters, and displayed in an appropriate public place in the School of Engineering. A notation is made on the student's record each time his name is included in an Honors List.

THE BACHELOR'S DEGREES

The Bachelor's degrees are Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, and Bachelor of Science in Engineering.

The degree of Bachelor of Science in Engineering may be earned with any of the following options: Chemistry, Engineering Administration, Machine Computer, Mathematics, or Physics.

REQUIREMENTS FOR THE DEGREES

Scholarship

A student must maintain a quality-point index of at least 2.00 to be in good academic standing.

In order to graduate, a student must have a quality-point index of at least 2.00 in all work taken at The George Washington University and accepted in the School of Engineering.

Mid-Semester Warning.—At the end of the seventh week of each semester, instructors report to the Dean the names of those students whose scholarship is tentatively deemed unsatisfactory. A warning notice is sent to the student and a copy to his adviser. A student who receives warning notices is required to consult his instructor and his adviser immediately.

The adviser may prescribe diagnostic tests and/or remedial study to be completed before the end of the current semester.

Probation.—A student whose quality-point index falls below 2.00 will be placed on probation. This probation will extend over the period in which the student attempts twelve semester hours of study. In certain circumstances the period of probation may be extended.

A student on probation is required to follow a program of study, including remedial studies if necessary, prescribed by the Committee on

Scholarship. A student on probation may not hold office or participate in the activities of any student organization or represent the School in any student activity.

Suspension. A student whose quality-point index is below 2.00 at the end of his probationary period will be suspended. A student whose quality-point index falls below 2.00, after he has once been removed from probation, will be suspended.

At the time of his suspension a student may apply to the Committee on Scholarship for guidance concerning his educational objectives.

A student suspended for poor scholarship may apply* to be readmitted in the semester or summer session which begins next after an interval of one year. To be considered for readmission he will be required to pass tests or examinations prescribed by the Committee on Admission and Advanced Standing. No advanced standing will be assigned for any course work taken during the period of suspension. A student readmitted after suspension will be on probation and will be required to raise his quality-point index to 2.00 within twelve semester hours of study, or be suspended. A student suspended twice for poor scholarship will not be readmitted.

The foregoing scholarship regulations are applied when a student has completed a minimum of 12 semester hours of work. Thereafter, the regulations are applied in multiples of 12 hours.

USE OF CORRECT ENGLISH

Any student whose use of English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean's Council. The Council may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the Dean's Council.

The foregoing regulation applies to both written and spoken English.

RESIDENCE

For the Bachelor's degrees, a minimum of one year or 36 semester hours must be completed in residence. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

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* Application for readmission should be made two months in advance to permit the taking and grading of readmission tests.

CURRICULUM REQUIREMENTS

The satisfactory completion of one of the following curricula is required.

Physical Education is required of all students in the freshman and sophomore years. (See "Physical Education Requirements", pages 51–52).

Variations from the prescribed curricula may be made, with the permission of the Dean's Council. A student desiring to omit a required course and substitute another must make written application to the Dean presenting satisfactory reasons for the substitution; and written approval must be obtained and the required fee must be paid before registration for the course.

A student who is absent from the University for one semester or more (except on national service leave) is required to satisfy the curriculum requirements existing at the time of his return, unless during his absence he maintains "in residence" status, see page 53.

FRESHMAN YEAR (FOR ALL ENGINEERING CURRICULA)

		Semester Hours
Chem. 11–12	General Chemistry	8
*Eng. 1, 2	English Composition	6
Math. 12	Analytic Geometry	3
Math. 19	Differential Calculus	3
ME 3–4	Graphical Communication I and II	4
ME 5	Orientation and Engineering Problems	2
ME 6	Engineering Problems	2
Phys. Ed.	See pages 51–52 for statement of requirement.	
†Phys. 6 and 7	General Physics	6
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 1–2 and 21–22 (6) for Physical Education 1–2 (2), and may postpone English 1–2 until sophomore year.

SOPHOMORE YEAR (FOR ALL ENGINEERING CURRICULA)

CE 12	Surveying (for B.C.E. candidates only)	3
CE 21	Statics	3
CE 24	Strength of Materials	3
Econ. 1	Principles of Economics (for B.E.E. candidates only)	3
EE 11	Electric Circuits	3
EE 12	Electric Machinery	3
Math. 20	Integral Calculus	3

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* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both semesters of the English composition course; those who are inadequately prepared for English 1 will be assigned to English A, for which credit will be given unless it is used to satisfy entrance requirements.

† The student who begins Physics with Physics 6 or 7, is subject to a qualifying examination. Credit will be given for Physics 5 if not used for entrance requirements.

		Semester Hours
Math. 103	Calculus and Differential Equations	3
ME 14	Analytical Kinematics (for B.M.E. and B.S. in Eng. candidates only)	3
Phys. Ed.	See pages 51–52 for statement of requirement.	
Phys. 8	General Physics	3
Phys. 55	Physical Measurements	3
Speech 1	Effective Speaking	3
*Elective	In humanities or social studies	6
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 11–12 and 51–52 (6) for Physical Education 1–2 (2), and may postpone English 1–2 until sophomore

Bachelor of Civil Engineering

JUNIOR YEAR

CE 121	Dynamics	3
CE 125	Engineering Materials	4
CE 132	Fluid Mechanics	3
CE 143–44	Structural Theory and Analysis I and II	8
EE 102	Engineering Electronics	3
Math. 112	Mathematics for Engineers and Scientists	3
ME 113	Theoretical Thermodynamics I	3
ME 118	Heat Transfer	3
*Elective	In humanities or social studies	4
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Elective (4).

SENIOR YEAR

CE 128	Substructures	3
CE 135	Hydraulic Engineering	3
CE 138	Sanitary Engineering	3
CE 145	Steel and Timber Structures	3
CE 146	Reinforced Concrete	3
CE 154	Structural Dynamics	3
CE 157	Advanced Strength of Materials	3
CE 163	Transportation Engineering	3
CE 168	Regional and Urban Planning	3
EA 211	Communication of Ideas	3
*Elective	In humanities or social studies	6
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Elective (3).

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* Credit is not given for courses elected in Physical Education or Secretarial Studies.

Bachelor of Electrical Engineering

JUNIOR YEAR

		Semester Hours
CE 121	Dynamics	3
EE 102	Engineering Electronics	3
EE 103	Electric and Magnetic Fields	3
EE 104	Field Analysis	3
EE 107	Steady-state Network Analysis	3
EE 111–12	Electrical Measurements	4
EE 113–14	Electric Power Laboratory	4
EE 118	Alternating-current Machinery	3
EE 122	Measurements and Electronics Laboratory	2
Math. 112	Mathematics for Engineers and Scientists	3
*Elective	In humanities or social studies	5
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Elective (3).

SENIOR YEAR

CE 132	Fluid Mechanics	3
EE 123	Communications and Electronics Laboratory	2
EE 124	Communications and High-frequency Laboratory	2
EE127	General Network Analysis	3
EE131	Electric Power Systems	3
EE 136	Electromagnetic Waves	3
EE137	Electronic Circuits and Systems	3
EE 171	Digital Circuitry and Systems	3
EE 189–90	Proseminar in Electrical Engineering	2
ES 154	Automatic Control	4
ME 113	Theoretical Thermodynamics I	3
*Elective	In humanities or social studies	3
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Elective(3).

Bachelor of Mechanical Engineering

JUNIOR YEAR

CE 121	Dynamics	3
CE 125	Engineering Materials	4
CE 132	Fluid Mechanics	3
EE 102	Engineering Electronics	3
Math. 112	Mathematics for Engineers and Scientists	3
ME 113	Theoretical Thermodynamics I	3
ME 114	Theoretical Thermodynamics II	3
ME 118	Heat Transfer	3

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* Credit is not given for courses elected in Physical Education or Secretarial Studies.

		Semester Hours
ME 120	Physical Metallurgy	3
Phys. 191	Nuclear Reactors	3
*Elective	In humanities or social studies	5
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Elective (5).

SENIOR YEAR

CE 157	Advanced Strength of Materials	3
ME 123	Advanced Dynamics	3
ME 135–36	Heat Power Engineering	6
ME 139	Fluid Machinery	3
ME 143	Production Engineering	3
ME 146	Dynamics of Compressible Fluids	3
ME 148	Machine Analysis and Synthesis	3
ES 154	Automatic Control	4
*Elective	In humanities or social studies	6
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Elective(3).

Bachelor of Science in Engineering

JUNIOR AND SENIOR YEAR

CE 121	Dynamics	3
CE 125	Engineering Materials	4
CE 132	Fluid Mechanics	3
EE 103	Electric and Magnetic Fields	3
Math. 112	Mathematics for Engineers and Scientists	3
ME 113	Theoretical Thermodynamics I	3
ME 118	Heat Transfer	3
ME 120	Physical Metallurgy	3
Phys.132	Electronics	3
	Total of required courses	28
Option	As approved by the Department of Option and by the Dean of the School of Engineering	30
*Elective	In humanities or social studies	12
	Total	70

ROTC.—Air Force ROTC students substitute Air Science 101–2 and 151–52 12) for Elective (3) and Option course (3).

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* Credit is not given for courses elected in Physical Education or Secretarial Studies.

The Bachelor of Science in Engineering curriculum provides training in the basic physical principles employed in engineering and in engineering methods of analysis, and in addition, offers an opportunity for study in optional fields in which the student has special interests.

Optional study can be selected from the fields of Chemistry, Engineering Administration, Machine Computer, Mathematics, or Physics. The program of study in the option is formulated by the department concerned in conference with the student. The program, bearing the approval of the Executive Officer of the department concerned, must be submitted by the student to the Dean before the beginning of the junior year.

Graduate Record Examinations

During the final semester of the senior year students in the School of Engineering are required to take the following Graduate Record Examinations: the Aptitude Test, which provides a measure of general scholastic ability at the graduate level; and the Advanced Test (Engineering) designed to measure the achievement of the college senior in his major field of study. (For further information concerning the Graduate Record Examinations, see page 53.)

THE MASTER'S DEGREES

Upon the satisfactory completion of the appropriate graduate requirements, the degree of Master of Science in Engineering or Master of Engineering Administration is conferred.

Study for the Master's degree is based upon a faculty-student relationship in which the ability and needs of the individual student are important elements in determining the curriculum. Programs are not restricted to one department or to a single field or type of study. They may include special instruction by assigned members of the engineering faculty or approved courses offered in other colleges and schools of the University. The Committee on Graduate Studies has the responsibility for establishing each student's program and for providing for its direction.

Advanced Standing

Graduate courses completed before admission to graduate study are not transferrable for degree credit. The Committee on Graduate Studies has the discretion, however, to consider them in establishing individualized programs. Course work to satisfy degree requirements in another school or college of the University may not be so applied in the School of Engineering.

REQUIREMENTS FOR THE DEGREES

Residence

The candidate for a Master's degree must complete a minimum of one year of full-time study, or the equivalent in part-time study, under the direction of the Committee on Graduate Studies. A full-time student must complete all requirements for the degree within three years; a part-time student, within five years.

Scholarship

A minimum grade of "Satisfactory" is required in all courses. A student who makes one grade of "Unsatisfactory" may repeat the course once, or he may appeal to the Committee on Graduate Studies for guidance. A student who receives two or more grades of "Unsatisfactory" will not be permitted to enroll further in the School of Engineering until he demonstrates by examination, or as the Committee may direct, that his deficiencies in course work have been removed.

Master's Problem

The degree candidate must submit an acceptable Problem to demonstrate his ability to make independent use of the knowledge and discipline of thought acquired and developed by graduate study, and to furnish objective evidence of constructive power in a given field. Work of a suitable character for which the student has professional responsibility may be considered, whether done on or off campus, provided no significant amount of work is completed without faculty supervision.

Comprehensive Examination

To demonstrate substantial understanding of principles and methods of their use in the area of his interest, the student must pass a comprehensive examination, written, oral, or both, as prescribed by the Committee on Graduate Studies. This examination will not be taken until the candidate has successfully completed the prescribed program of study and submitted an acceptable Master's Problem.

THE DEGREE OF MASTER OF SCIENCE IN ENGINEERING

The objective of this discipline is a substantial comprehension of scientific principles and methods for their use, as applied in modern engineering. Increased understanding of engineering science and its use in solving engineering problems are sought, rather than a breadth of familiarity with applications and techniques.

A program of study consisting of at least twenty-four semester hours of graduate courses to prepare the candidate for his comprehensive examination is formulated from the following areas with particular attention to the individual student's needs and objectives. The program may provide for broad coverage in a variety of fields or may be designed to give some degree of specialization in a particular area, as determined by conference with the Committee at the time of admission to candidacy.

The level of the courses ordinarily requires as prerequisite the satisfactory completion of at least one undergraduate course in mathematics beyond the first course in ordinary differential equations and at least one in the area of the graduate course to be undertaken.

REQUIRED COURSES

Upon admission to graduate study, courses in the following areas must be taken prior to application for admission to candidacy for the degree: analysis of engineering systems, analytical mechanics, and a choice of one or two courses in the areas marked by an asterisk in the Fundamental Engineering group below.

PROGRAM OF STUDY

After admission to candidacy for the degree, the balance of the program may be arranged in consultation with the Committee on Graduate Studies from the following:

Basic

Mathematics.—Theory of functions of a complex variable, mathematical statistics, mathematical probability, vectors, tensors, matrices.

Physics.—Classical field theory, quantum mechanics, solid state physics, nuclear physics.

Applied Mathematics.—Numerical and graphical analysis, advanced mathematics for engineers.

Fundamental Engineering

*Automatic Control
*Elasticity
Elastic Stability
*Electric Networks
*Electromagnetic Fields
Electronics
*Fluid Dynamics
Gas Dynamics
Heat Transfer
Modulation and Noise
Nonlinear Mechanics
Plates and Shells
Plasticity
*Structural Theory
*Thermodynamics
*Transients

Elective

This group is comprised of courses offered occasionally in such areas as digital computers, high-speed aerodynamics, jet propulsion, potential theory, structural analysis, and transistors. In addition, graduate courses in areas not included in the Basic group offered by the departments of Mathematics, Statistics, Physics, and Chemistry may be taken for degree credit with the approval of the Committee. In general, work in areas which are characterized by a scientific discipline may be accepted in satisfaction of course requirements for the degree of Master of Science in Engineering.

THE DEGREE OF MASTER OF ENGINEERING ADMINISTRATION

The objective of this discipline is to develop an understanding of the principles and a competence in the practices of administration as applied to engineering and scientific activities. Knowledge and understanding are sought rather than mere familiarity with techniques.

A study program is prescribed for each candidate, in accordance with his preparation and objective, by the Committee on Graduate Studies or an assigned adviser. Programs are integrated sequences of courses.

The degree of Master of Engineering Administration is granted upon the successful completion of (1) thirty semester hours of graduate courses, including the written Master's Problem, and (2) the Comprehensive Examination.

Prerequisite to Admission to Candidacy

In addition to the requirements for admission to candidacy stated on page 20, the applicant must have a knowledge of the principles of human relations, the fundamentals of accounting, and the fundamentals of statistics. This requirement may be met (1) by the successful completion of the following undergraduate courses or an approved equivalent: Psychology 145 *Principles of Human Relations,* Accounting 3 *General Accounting,* Statistics 51 *Introduction to Business and Economic Statistics,* or (2) by demonstrating an acceptable knowledge acquired from experience in the subject fields.

Program of Study

The content of these courses is considered essential knowledge for every candidate for the degree of Master of Engineering Administrtion. The candidate is required to complete all of the courses except those in which he (1) has successfully completed graduate study or (2) can demonstrate to the Committee on Graduate Studies an acceptable knowledge of the course field.

		Semester Hours
EA 201	Engineering Administration I	3
EA 202	Engineering Administration II	3
EA 271	Operations Research	3
EA 290	Problems in Engineering Administration	3
EA 291	Master's Problem in Engineering Administration	3

The following courses provide knowledge in certain special areas of significance in engineering administration. The candidate is required to select at least one; it is preferable that he elect all three.

EA 251	Management of Research and Development	3
EA 252	Production and Maintenance Management	3
Stat. 262	Managerial Statistics and Quality Control	3

Elective

Courses are to be elected to provide a total of 30 semester hour for the program.

EA 191	Engineering Law	3
EA 205	Engineer and Society	3
EA 211	Communication of Ideas	3
EA 212	Methods and Materials of Professional Communication	3
EA 261	Economic Analysis in Engineering Planning	3
EA 263	Quantitative Techniques of Engineering Administration	3
EA 272	Problems in Operations Research	3
EA273–74	Techniques of Operations Research	6
EA 295	Applied Research in Engineering Administration (arr.)	
EA 296	Research in Engineering Administration (arr.)	
Acct. 211–12	Managerial Accounting	6
Acct. 293	Budget Preparation and Control	3
Bus. Adm. 250	Contract Administration	3
Geog. 271	Engineering Geography	3
Pub. Adm. 213	Administration in Government	3
Stat. 271–72	Statistical Information Theory	6
Elective	(To be selected from Engineering or the sciences) as approved by the Committee on Graduate Studies	3–6

THE SCHOOL OF PHARMACY

THE FACULTY AND STAFF OF INSTRUCTION *

Charles Watson Bliven, M.S., *Dean of the School of Pharmacy*
Robert Meyer Leonard, Ph.D., *Assistant Dean of the School of Pharmacy*

Ralph Dale Kennedy, Ph.D., *Professor of Accounting*
Ira Bowers Hansen, Ph.D., *Professor of Zoology*
Charles Watson Bliven, M.S., *Professor of Pharmacy*
Chester Elwood Leese, Ph.D., *Fry Professor of Physiology*
Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
George Martin Koehl, A.M., *Professor of Physics*
Robert Corbin Vincent, Ph.D., *Professor of Chemistry*
Russell Bradford Stevens, Ph.D., *Professor of Botany*
Robert Hamilton Moore, Ph.D., *Professor of English Composition*
Robert Meyer Leonard, Ph.D., *Associate Professor of Pharmacology and Pharmacognosy*
Carson Gray Frailey, A.B., LL.B., *Associate Professorial Lecturer on Pharmaceutical Law*
John William Skinner, Ph.D., *Assistant Professor of Economics*
Franklin Dero Cooper, M.S., *Assistant Professor of Hospital Pharmacy*
Charles Joseph Kokoski, Ph.D., *Assistant Professor of Pharmacy*
Samuel Meyer Schwartz, Ph.D., *Assistant Professor of Pharmaceutical Chemistry*
Rudolph Hugh, Ph.D., *Assistant Professor of Bacteriology*
Gust George Koustenis, B.S. in Phar., *Teaching Fellow in Pharmacy Administration*

Special Lecturers

William Paul Briggs, M.S., Sc.D., LL.D., *Executive Director and Secretary, American Foundation for Pharmaceutical Education;* Pharmacy Training
John Christian Krantz, Jr., Ph.D., *Professor of Pharmacology, University of Maryland;* Pharmacological Research
Justin Lawrence Powers, Ph.D., *Chairman, Committee on National Formulary, American Pharmaceutical Association;* Official Drug Standards

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* The President of the University, the Dean of Faculties, the Dean and Assistant Dean of the School, the Registrar of the University, the Director of Admissions of the University, the Professors, Associate Professors, and Assistant Professors constitute the Faculty.

Robert Philip Fischelis, B.S., Phar.D., Sc.D., *Secretary and General Manager, American Pharmaceutical Association;* Pharmaceutical Organizations

PGad Bryan Morehouse, LL.M., A.B., *Assistant General Counsel in Charge of Compliance, Federal Trade Commission;* Drug Trade Regulation

Louis Edward Kazin, Phar.G., *Associate Editor, Drug Topics;* Contemporary Pharmacy

Nevis Eugene Cook, B.S., B.S. in Phar., *Assistant to the Director, Bureau of Enforcement, Food and Drug Administration;* Drug Control

Karl Bambach, Ph.D., *Executive Vice-President, American Drug Manufacturers Association;* Pharmaceutical Industry

COMMITTEES *

THE DEAN'S COUNCIL †

Ralph Dale Kennedy
Robert Meyer Leonard
Ira Bowers Hansen

COMMITTEE ON SCHOLARSHIP

Robert Corbin Vincent, *Chairman*
Robert Meyer Leonard
Samuel Meyer Schwartz

COMMITTEE ON ADMISSION AND ADVANCED STANDING

Robert Meyer Leonard, *Chairman*
Charles Watson Bliven
Charles Joseph Kokoski

ADVISORY COMMITTEE

Irving Alexander Tennyson, *Chairman*
Howard Bradbury
Harold Clayton Kinner
William Paul Briggs
Fred Royce Franzoni

GENERAL INFORMATION

INTRODUCTORY

In 1867 the foundation for the National College of Pharmacy was laid by the Apothecaries' Association of the District of Columbia. The College was opened in 1872 and continued until 1906, when it became affiliated with The George Washington University.

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* The Dean and Assistant Dean of the School of Pharmacy are members ex officio of all committees.

† Elected by the Faculty.

The School of Pharmacy is accredited by the American Council on Pharmaceutical Education as a class "A" school. It is a member of the American Association of Colleges of Pharmacy.

Washington offers many opportunities for the student of pharmacy. The American Institute of Pharmacy, the headquarters of the American Pharmaceutical Association, is only a few blocks from the School of Pharmacy. The Institute also houses a pharmaceutical museum, a library, and research laboratories. Government agencies and laboratories whose activities are closely allied to pharmacy, and the government libraries, the facilities of which are open to the student, are readily accessible.

The Institute and the Federal Government bring to Washington leaders in the fields of pharmacy, many of whom present to senior students in the School of Pharmacy current professional information.

The objectives of the School of Pharmacy are (1) to train professionally competent pharmacists, primarily for retail practice, and to help them acquire specialized training, a general education, and an attitude of responsibility to their profession and to society; (2) to promote the health profession of pharmacy in general, and particularly within the community.

To achieve these objectives, the School has developed a systematic plan of instruction for the professional courses which is integrated with the liberal arts program. It further encourages student participation in university, professional, and civic organizations and activities which increase professional competence, raise professional standards, and help develop social responsibility.

REGULATIONS

Students in the School of Pharmacy are subject to and are expected to familiarize themselves with the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *as stated on pages 13–28, and the University regulations stated on pages 48–55.*

Students registered in the Junior College Pharmacy curriculum are subject to the regulations of the Junior College. However, in the professional courses of that curriculum, the attendance requirements of the School of Pharmacy prevail.

AMOUNT OF WORK

Normal work for any year is that outlined under the head of "Curriculum Requirements", below. A student who wishes to take more than the normal amount of work may do so only with the permission of the Committee on Scholarship, the members of which are guided in their decision by his scholastic record and the extent to which he is employed.

A student on probation is limited in the number of semester hours he may carry.

The student is not encouraged to undertake outside employment while attempting a full course of study. A student who maintains a quality-point index of 2.00 or higher for all courses and a quality-point index of 2.50 or higher for pharmacy courses may be granted permission by the Dean to undertake outside employment. The amount of employment permitted is governed by the scholarship record of the student and the number of semester hours for which he is registered.

A student previously unemployed who accepts employment subsequent to registration or at any time during a semester is required to report that fact immediately to the Dean.

Attendance

Except by special permission of the instructor, credit will not be given for any pharmacy course if absences, including both lecture and laboratory, exceed in number for each semester the hours of credit for the semester. If a course has distinct divisions such as lectures, laboratories, or recitations, the absences apply pro rata to such divisions.

EXAMINATIONS BEFORE STATE BOARDS OF PHARMACY

To be eligible for examination before state boards of pharmacy, the applicant is required to present satisfactory evidence of graduation from a college of pharmacy. In addition, most states require that the applicant have one year of practical experience in a pharmacy. This experience may not be gained concurrently with the school year.

THE DEGREE OF BACHELOR OF SCIENCE IN PHARMACY

Upon the satisfactory completion of the requirements of the School of Pharmacy, the degree of Bachelor of Science in Pharmacy is conferred.

REQUIREMENTS FOR THE DEGREE

Scholarship

The system of grading and of computing scholarship is described in detail on pages 48 and 49.

In order to graduate, a student must have a general quality-point index of at least 2.00. In addition, he must have a quality-point index of at least 2.50 in all pharmacy courses.

Probation.—A student must maintain a general (over-all) quality-point index of 2.00 and a pharmacy quality-point index of 2.50 or be placed on probation.

The following scholarship rules on general quality-point index are applied when a student has undertaken a multiple of 9 semester hours. The rules on pharmacy quality-point index are applied when a student has completed 12 pharmacy semester hours and thereafter are applied in multiples of 9 hours.

First Probation.—A student is placed on first probation when his general quality-point index is below 2.00 *or* his pharmacy quality-point index is below 2.50. (See also under Suspension.)

Second Probation.—A student who has a general quality-point index below 2.00 *or* a pharmacy quality-point index below 2.50 after a multiple of 9 semester hours is placed on second probation. However, a student who has a general quality-point index between 1.50 and 2.00 will be considered by the Committee on Scholarship. A student who has a pharmacy quality-point index between 2.20 and 2.50 will be considered by the Committee. In each case, the Committee may retain him on probation or suspend him.

Suspension.—A student who has a general quality-point index below 1.50 or a pharmacy quality-point index below 2.20 will be suspended; however, a student who has a general quality-point index between 1.40 and 1.50 will be considered by the Committee on Scholarship. A student who has a pharmacy quality-point index between 2.00 and 2.20 will be considered by the Committee. In each case, the Committee may retain him on probation or suspend him.

A student who is subject to probation for the third time, whether successive or after an interval, will be suspended. In considering a student for suspension, the rules on probation shall apply to either the general *or* the pharmacy quality-point index with probations for each index independent of the other index.

A student suspended for poor scholarship may apply for readmission after an interval of a calendar year. He must then submit evidence to the Dean of the School of Pharmacy that during his absence from the University he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

CURRICULUM

The Junior College Pharmacy curriculum (see pages 69–70) comprises the first two years of the four-year pharmacy course. The curriculum is established by the faculties of the School of Pharmacy and the Junior College in accordance with professional needs, and complies, in so far as possible, with the latter group regarding the general cultural studies.

The laboratory method of teaching is used. Recitation classes are held in connection with each course in order to provide systematic drill in the subjects.

The curriculum requirements include at least 141 semester hours. The following curriculum leads to the degree of Bachelor of Science in Pharmacy.

Freshman and Sophomore Years

Courses	Did. hrs.*	Lab hrs.*	Sem. hrs.	Clock hrs.*
Courses in the Junior College (see pages 69–70)	880	656	73	1536

Junior Year: Fall Semester

Courses	Did. hrs.	Lab. hrs.	Sem. hrs.	Clock hrs.
Chemistry 21	32	96	4	128
Pharmacy 101	32	48	3	80
Pharmacy 105	32	....	2	32
Pharmacy 107	48	....	3	48
Physiology 115	48	....	3	48
Physiology 117	....	48	1	48
Total	192	192	16	384

Junior Year: Spring Semester

Bacteriology 112	48	96	4	144
Chemistry 22	32	96	4	128
Pharmacy 102	32	96	4	128
Pharmacy 106	32	....	2	32
Pharmacy 110	48	....	3	48
Total	192	288	17	480

Senior Year: Fall Semester

†Biochemistry 221	32	96	4	128
Pharmacy 103	32	96	4	128
Pharmacy 111	48	....	3	48
Pharmacy 165	48	....	3	48
Elective	48	....	3	48
Total	208	192	17	400

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* Exclusive of Physical Education.

† Students planning to do graduate work may request the substitution of other courses for Biochemistry 221–22 if these courses will be included in the graduate curriculum.

Senior Year: Spring Semester

Courses	Did. hrs.	Lab. hrs.	Sem. hrs.	Clock hrs.
Bacteriology 210	32	....	2	32
[*]Biochemistry 222	32	96	4	128
Pharmacy 166	32	64	3	96
Pharmacy 176	32	....	2	32
Pharmacy 178	64	....	4	64
Pharmacy 188	48	....	1	48
Pharmacy 190	16	....	1	16
Pharmacy 192	....	48	1	48
Total	256	208	18	464
Grand Total	1728	1536	141	3264

THE DEGREE OF MASTER OF SCIENCE IN PHARMACY[†]

Upon the satisfactory completion of the graduate requirements of the School of Pharmacy, the degree of Master of Science in Pharmacy is conferred.

Definition of the Master's Work

The study leading to the degree of Master of Science in Pharmacy is a comprehensive survey of one or more of the fields of knowledge embraced by Pharmacy. It is a continuation of the work of the student's undergraduate major and involves a greater acquaintance with scholarly method.

The student must satisfy certain minimum requirements as to previous preparation, residence, ability to read an approved modern foreign (European) language, and courses taken; but these requirements, while essential, are regarded primarily as qualifying measures. The student's knowledge of his field, as demonstrated by his thesis and by the results of his Master's examination (together with such other examinations involving special skills or techniques as may be required), is the basis upon which the Master's degree is conferred. The foreign language requirement may be waived by faculty action in the instance of students whose field of study at the Master's level may not require such preparation.

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[*] Students planning to do graduate work may request the substitution of other courses for Biochemistry 221–22 if these courses will be included in the graduate curriculum.

[†] Courses applicable to this degree are not offered in 1958–59.

REQUIREMENTS FOR THE DEGREE

Residence

An academic year of residence is required, i.e., completion of a minimum of 30 semester hours of work including the thesis, which is counted as the equivalent of 6 hours of course work. Summer work may be counted in residence, but in no case may the period of residence aggregate less than twenty-seven weeks. Not more than 12 hours (which must be approved in advance by the Dean of the School of Pharmacy) may be taken in another school or division of this University, and such work may not be counted toward both a degree in that school or division and the Master's degree in the School of Pharmacy.

Amount of Work

A student whose previous preparation in his chosen field has been adequate may complete his requirements, including the thesis, by a minimum of 30 semester hours; others are required to do additional work. First-group courses may not be credited toward the Master's degree. Pharmacy courses numbered below 200 may be credited toward the Master's degree only when registration for graduate credit has been approved at the beginning of the course by the instructor and the Dean of the School of Pharmacy.

Admission to Candidacy

In addition to admission requirements stated on pages 20–21, the applicant for admission to candidacy for the Master's degree must be approved by the appropriate representative of the Department of Pharmacy and by the Dean.

Scholarship

A student whose scholarship is considered unsatisfactory may be suspended by the Dean upon recommendation of the staff member under whom the student is working.

The Thesis

The thesis may be of a research, expository, critical, or creative type.

The main purpose of a Master's thesis is to demonstrate the student's ability to make independent use of the information and training acquired through his other disciplines, and to furnish objective evidence of his constructive powers in his chosen field. Registration for the thesis must be no later than the beginning of the final year of preparation, unless the professor in charge of the thesis permits registration at the beginning of the final semester. The choice of the thesis subject must be approved by the professor in charge of the student's field and recorded in the

Office of the Registrar by the date announced in the University calendar. Registration for the thesis is ordinarily made on the basis of 3 semester hours for two successive semesters. In exceptional cases, and with the approval of the professor in charge of the thesis, the student may register for the entire 6 hours during a single semester. The typewritten thesis in its final form must have the approval of the professor in charge of the student's field and must be presented to the Dean by the student not later than the date announced in the University calendar. Requirements regarding the form of the thesis are stated on pages 53–54, and additional information will be supplied by the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. The student must, however, be registered in residence during this period. If the preparation of the thesis extends beyond the two-year period the student must register for it again, and pay tuition on the same basis as for a repeated course.

FINAL EXAMINATION

In addition to the course examinations, the candidate must pass a final examination on the thesis and its related fields. This examination may be either written or oral at the discretion of the Faculty.

If the thesis is submitted more than three years after the course requirements have been completed, a written examination covering the student's complete program of study will also be required.

THE SCHOOL OF EDUCATION

THE FACULTY AND STAFF OF INSTRUCTION *

James Harold Fox, A.M., Ed.D., *Dean of the School of Education*

Blake Smith Root, A.M., Ed.D., *Assistant Dean of the School of Education*

Ruth Harriet Atwell, A.M., *Professor of Physical Education for Women*

Mitchell Dreese, Ph.D., *Professor of Educational Psychology*

James Harold Fox, A.M., Ed.D., *Professor of Education*

Thelma Hunt, Ph.D., M.D., *Professor of Psychology*

Frances Kirkpatrick, A.M., *Professor of Home Economics*

William Henry Myers, A.M., *Professor of Physical Education for Men*

Burnice Herman Jarman, A.M., Ed.D., *Professor of Education*

Chester Elwood Leese, Ph.D., *Fry Professor of Physiology*

Helen Bennett Lawrence, A.M., *Professor of Physical Education for Women*

Blake Smith Root, A.M., Ed.D., *Professor of Education*

Ralph Windsor Ruffner, A.M., Ed.D., *Professor of Education*

Joseph Henry Krupa, M.S., Ed.D., *Professor of Physical Education for Men*

Calvin Weir Pettit, Ph.D., *Professor of Speech*

Kathryn Mildred Towne, A.M., *Professor of Home Economics*

Elizabeth Burtner, A.M., *Professor of Physical Education for Women*

Anthony Charles LaBue, B.S., Ed.D., *Professor of Education*

Ray LaForest Hamon, Ph.D., *Professorial Lecturer in Education*

Charles Edward Bish, A.M., Ed.D., *Professorial Lecturer in Education*

John Frederick Brougher, A.M., Ed.D., *Professorial Lecturer in Education*

Madaline Kinter Remmlein, Ph.D., J.D., *Professorial Lecturer in Education*

Joseph Bueol Johnson, A.M., Ed.D., *Professorial Lecturer in Education*

Florence Mary Lumsden, A.M., Ed.D., *Professorial Lecturer in Education*

Howard Odin Johnson, A.M., Ed.D., *Professorial Lecturer in Education*

Jackson Moore Anderson, Ph.D., *Professorial Lecturer in Physical Education*

Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*

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* The President of the University, the Dean of Faculties, the Dean and Assistant Dean of the School, the Registrar of the University, the Director of Admissions of the University, Professors, Associate Professors, and Assistant Professors constitute the Faculty.

Raymond George Hanken, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*

Mildred Hollander Shott, A.M., *Associate Professor of Secretarial Studies*

Vincent James DeAngelis, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*

Grover LaMarr Angel, A.M., Ed.D., *Associate Professor of Education*

John Carl Lang, A.M., Ed.D., *Associate Professorial Lecturer in Education*

LuVerne Crabtree Walker, A.M., *Associate Professorial Lecturer in Education*

Raymond Ray Reed, A.M., *Associate Professorial Lecturer in Education*

Eugenia Campbell Nowlin, A.M., *Associate Professorial Lecturer in Education*

Mary Ellen Coleman, A.M., *Assistant Professor of Education; Director of the Reading Clinic*

Eva Mayne Johnson, Ph.D., *Assistant Professor of Psychology*

Carol Ruth St. Cyr, Ph.D., *Assistant Professor of Education*

William Andrew McCauley, Ph.D., *Assistant Professor of Education*

Harry Grubb Detwiler, A.M., *Assistant Professor of Education*

Loretta May Stallings, A.M., *Assistant Professor of Physical Education for Women*

Camille Jacob Craig, B.S. in P.E., A.M. in Ed., *Assistant Professor of Physical Education for Women*

Levin Bartow Hanigan, B.S., Ed.D., *Lecturer in Education*

John Giancaspro, A.M., *Lecturer in Education*

CONSULTANT IN RESEARCH

Wesley Earl Armstrong, M.S., Ed.D., *Director, National Council for Accreditation of Teacher Education*

FIELD STUDIES

Robert Whittington Eller, A.M., *Director of Field Studies*

FIELD SERVICE COORDINATORS

Alexander Anderson, A.M., *Assistant Principal, Washington-Lee High School, Arlington, Virginia*

Mary Foust Maré, A.M., *Assistant Principal and Dean of Girls, Wakefield High School, Arlington, Virginia*

Claude Manby Richmond, B.S., A.M. in Ed., *Principal, Stratford Junior High School, Arlington, Virginia*

COMMITTEES*

THE DEAN'S COUNCIL†

1959

Calvin Weir Pettit

Anthony Charles LaBue

1960

Elizabeth Burtner

Vincent James DeAngelis

1961

Frances Kirkpatrick

Harry Grubb Detwiler

COMMITTEE ON GRADUATE STUDIES

The Dean of the School, *Chairman*

Mitchell Dreese

Burnice Herman Jarman

Blake Smith Root

Grover LaMarr Angel

Thelma Hunt

Don Carlos Faith

Anthony Charles LaBue

Carol Ruth St. Cyr

William Andrew McCauley

COMMITTEE ON ADMISSION AND ADVANCED STANDING

The Dean of the School, *Chairman*

Ruth Harriet Atwell

Frances Kirkpatrick

Harold Griffith Sutton

Blake Smith Root

Joseph Henry Krupa

COMMITTEE ON SCHOLARSHIP

Blake Smith Root, *Chairman*

Helen Bennett Lawrence

Kathryn Mildred Towne

Vincent James DeAngelis

GENERAL INFORMATION

INTRODUCTORY

It is the purpose of the School of Education to prepare teachers, counselors, and administrators for the higher ranges of educational service and to offer opportunities to teachers of experience to extend their education. The School includes the departments of Education, Physical Education, and Home Economics. It offers both graduate and undergraduate work. Other departments of the University provide general education and subject-matter courses needed for a well-balanced program of teacher education.

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* The Dean and Assistant Dean of the School of Education are members ex officio of all committees.

† Elected by the Faculty.

The schedule of courses is arranged to meet the convenience of both full-time and part-time students. By attending evening, Saturday, and summer classes, teachers in the schools of the metropolitan Washington area and others within commuting range may complete all the requirements for a degree without giving up their positions.

REGULATIONS

Students in the School of Education are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *stated on pages 13–28, and the University regulations stated on pages 48–55.*

AMOUNT OF WORK

Fifteen to 17 semester hours of credit constitute a normal program. A student with a quality-point index of 3.00 or higher, may, with the permission of the Dean, enroll for 18 or 19 hours. No student may enroll for more than 19, except by permission of the Committee on Scholarship.

A student with extracurricular employment of 15 hours or less a week is permitted to carry a normal program of college work.

A student with extracurricular employment of from 16 to 25 hours a week may enroll for 12 or 13 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 15 or 16 hours.

A student with extracurricular employment of from 26 to 34 hours a week may enroll for 9 or 10 semester hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 12 or 13 hours.

A student with extracurricular employment of 35 hours or more a week may enroll for 6 or 7 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 9 or 10 hours.

A student who increases his hours of employment subsequent to registration or at any time during a semester is required to report that fact immediately to the Dean so that his program may be brought within the limitations outlined above.

THE BACHELOR'S DEGREES

Upon the satisfactory completion of the undergraduate requirements of the School of Education, the degree of Bachelor of Arts in Education, Bachelor of Science in Home Economics, or Bachelor of Science in Physical Education is conferred.

The program of work of each student must be approved by a Faculty adviser. Since each student's program of work will be defined by his particular needs, it is important that the student have a clear concept of his major interest in education, and also that he be familiar with the teaching-certificate requirements in the locality in which he expects to teach.

REQUIREMENTS FOR THE DEGREES

To be recommended for a degree a student must satisfy the admission, residence, scholarship, and curriculum requirements.

Residence

Candidates for the Bachelor's degrees must complete satisfactorily while matriculated in the School of Education a minimum of 30 semester hours, 9 of which, with the approval of the adviser, may be in the Off-Campus Division of the College of General Studies.

For full details concerning registration, see pages 52–53.

Scholarship

The system of grading and of computing scholarship is described in detail on pages 48 and 49.

In order to graduate, a student must have a quality-point index of at least 2.00.

Probation.—An undergraduate student who fails to maintain a quality-point index of at least 2.00 will be placed on probation. A student remains on probation as long as his quality-point index is below 2.00, or until his probation is removed by the Committee on Scholarship.

Suspension.—An undergraduate student on probation who fails to raise his quality-point index to 2.00 within the time specified by the Committee on Scholarship may be suspended. An undergraduate student who fails to make passing grades in one-half or more of a minimum of 16 semester hours of course work may be suspended.

A student who has been suspended for poor scholarship may within ten days appeal his case to the Committee on Scholarship through the Dean. If the case appears to be remediable and the student appears likely to improve in his scholarship thereafter, the Committee may readmit him on probation. A student who has been denied readmission on probation may petition the Committee on Scholarship through the Dean for readmission after a lapse of a calendar year. A student who has been suspended twice will not be readmitted.

CURRICULUM REQUIREMENTS

In any of the following curricula at least 30 semester hours must consist of courses numbered above 100.

Bachelor of Arts in Education

Programs leading to the degree of Bachelor of Arts in Education have four main objectives: (1) provision of general educational backgrounds, (2) a functional command of ideas, concepts, knowledges, and skills in one or more teaching fields, (3) a mastery of basic professional information and skills adequate for a beginning teacher, and (4) development of attitudes needed for success in teaching. Since the contents of teaching fields differ in scope and complexity, some programs are longer than others in terms of semester hours. None require less than 126 hours of satisfactory work, exclusive of required Physical Education.

Normally, from 60 to 64 semester hours of the total requirement are completed in the Junior College of the University or in an equivalent institution elsewhere. (See "Education", page 70.)

The general educational backgrounds needed by prospective teachers are obtained through: (1) precollege education, (2) college courses, (3) work experience, (4) leadership activities, (5) participation in student campus activities, and (6) utilization of off-campus cultural opportunities.

Teaching-field requirements include satisfactory completion of prescribed academic courses in one or more fields, a satisfactory score on the special field examination of the National Teacher Examinations, and satisfactory completion of the prescribed special methods courses. Programs of study are available in the following fields: art, biology, business education, chemistry, elementary education, English, French, general science, geography, German, history, mathematics, physics, social studies, Spanish, and speech.

Those preparing to teach on the secondary level are required to complete the prescribed courses in a minor as well as a major field.

Prescribed Courses in the Various Teaching Fields *

ART

	Semester Hours
Six semester hours from the following.............................	6
Art 1: Art Appreciation	
Art 31–32: Survey of Art	
Art 71–72: Introduction to the Arts in America	
Art 101: Ancient Art	
Art 102: Medieval Art	
Art 108: Baroque Art in Italy	

	Semester Hours
Art 109: Nineteenth Century Art in Europe	
Art 110: Contemporary Art	
Six semester hours from the following	6
Art 105: Renaissance Art in Italy	
Art 106: Renaissance Art in the North	
Art 143: Primitive Art	
Art 146: Art of the Far East	
Twenty-four semester hours from the following	24
Art 45–46: Drawing and Painting I—Life and Still Life	
Art 55–56: Drawing and Painting I—Life and Portrait	
Art 65–66: Drawing and Painting I—Life, Still Life, and Portrait	
Art 67–68: Drawing and Painting I—Life and Portrait	
Art 75–76: Drawing and Painting I—Life, Still Life, and Portrait	
Art 81–82: Sculpture I	
Art 125–26: Drawing and Painting II—Life, Still Life, and Portrait	
Art 127–28: Drawing and Painting II—Life and Portrait	
Art 165–66: Drawing and Painting II—Life and Portrait	
Art 179–80: Sculpture II	
Art 183–84: Commercial Art	
Total	36

BIOLOGY

Biology 1–2: Survey in Biology	6
Botany 1: Structure and Functions of the Flowering Plant	3
Botany 2: Survey of the Plant Kingdom	3
Home Economics 152: Nutrition	3
Physiology 115: Physiology	3
Zoology 1–2: Introduction to Zoology	8
*Additional courses, as approved by the adviser	9
Total	35

BUSINESS EDUCATION

Accounting 1: Introductory Accounting	3
Economics 1–2: Principles of Economics	6
Secretarial Studies 51: Business Correspondence	3
Additional courses, as prescribed, in *one* of the following groups:	
Group 1—Secretarial Studies †	
Secretarial Studies 2: Intermediate Typewriting	3
Secretarial Studies 12: Intermediate Shorthand and Transcription	3
Secretarial Studies 15: Advanced Shorthand, Typewriting, and Transcription	3
Secretarial Studies 16: Secretarial Shorthand, Typewriting, and Transcription	3
Secretarial Studies 54: Secretarial Practice	3

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* Not required for the minor.

† Candidates inadequately prepared for Secretarial Studies 2 or 12 may be required to take Secretarial Studies 1 or 11.

	Semester Hours
*Additional courses from the following, as approved by the adviser	6
Accounting 2: Introductory Accounting	
Business Administration 101: Business Organization and Combination	
Business Administration 109: Office Management	
Business Administration 141: Principles of Marketing	
Business Administration 151: Retailing	
Business Administration 161: Commercial Law	
Economics 121: Money and Banking	
Statistics 52: Mathematics of Finance	
Total	33
Group 2—Bookkeeping, Business Arithmetic, and Business Law	
Accounting 2: Introductory Accounting	3
Business Administration 101: Business Organization and Combination	3
Business Administration 102: Business Management	3
Business Administration 161–62: Commercial Law	6
Statistics 52: Mathematics of Finance	3
*Six semester hours from the following, as approved by the adviser	6
Accounting 111: Financial Statement Analysis	
Business Administration 121: General Insurance	
Business Administration 131: Business Finance	
Business Administration 138: Investments	
Economics 121: Money and Banking	
Total	36
Group 3—Distributive Education	
Business Administration 141: Principles of Marketing	3
Business Administration 142: Marketing Problems	3
Business Administration 145: Sales Management	3
Business Administration 151: Retailing	3
*Twelve semester hours from the following, as approved by the adviser	12
Business Administration 146: Sales Management Problems	
Business Administration 147: Advertising	
Business Administration 150: Principles of Purchasing	
Business Administration 158: Traffic Management	
Business Administration 175: Introduction to Foreign Trade	
Business Administration 176: Exporting and Importing	
Total	36

CHEMISTRY

Chemistry 11–12: General Chemistry	8
Chemistry 21: Qualitative Inorganic Analysis	4
Chemistry 22: Quantitative Inorganic Analysis I	4

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* Not required for the minor.

	Semester Hours
Chemistry 151–52: Organic Chemistry	8
Chemistry 191: History of Chemistry	2
Mathematics 3: College Algebra	3
Mathematics 6: Plane Trigonometry	3
Mathematics 12: Analytic Geometry	3
Physics 5, 6, 7: General Physics	9
Total	44

ELEMENTARY EDUCATION

Education 113: Elementary School Art	3
Education 114: Elementary School Music	3
Education 117: Elementary School Science	3
Education 128: Children's Literature	3
History 71–72: Development of the Civilization of the United States	6
Physical Education 101: Physical Education in Elementary School	3
Science, as approved by adviser	6–14
Twelve semester hours from the following, as approved by the adviser	12
Economics 1–2: Principles of Economics	
Geography 51, 52: Introduction to Geography; World Regions	
History 39–40: Development of European Civilization	
Political Science 9–10: Government of the United States	
Religion 59–60: History of Religion	
Sociology 1–2: Introductory Sociology	
Total	39–47

ENGLISH

English 1, 2: English Composition	6
English 52: Introduction to English Literature	3
English 71–72: Introduction to American Literature	6
English 125: The Evolution of Modern Speech	3
English 135–36: Shakespeare	6
Speech 11: Voice and Diction	3
*Nine semester hours from the following, as approved by the adviser	9
English 151–52: The Romantic Movement	
English 161–62: Victorian Literature	
English 165–66: The Twentieth Century	
English 171–72: Studies in American Literature	
English 173–74: Major American Poets	
English 176: American Drama	
English 177–78: American Fiction	
English 182: The English Novel	
English 199: Proseminar	
Total	36

FRENCH

French 1–2: First-year French	6
French 3–4: Second-year French	6

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* Not required for the minor.

	Semester Hours
French 9–10: French Conversation and Composition	6
French 51–52: Survey of French Literature and Civilization	6
*Additional courses in French, as approved by the adviser	12
Total	36

GENERAL SCIENCE †

Chemistry 11–12: General Chemistry	8
Chemistry 21: Qualitative Inorganic Analysis	4
Physics 5, 6, 7, 8: General Physics	12
Nine semester hours from the following	9
Mathematics 3: College Algebra	
Mathematics 6: Plane Trigonometry	
Mathematics 12: Analytic Geometry	
Mathematics 19: Differential Calculus	
Mathematics 20: Integral Calculus	
One of the following	6–8
Biology 1–2: Survey in Biology	
Botany 1, 2: Structure and Functions of the Flowering Plant; Survey of the Plant Kingdom	
Zoology 1–2: Introduction to Zoology	
Total	39–41

GEOGRAPHY

Geography 51: Introduction to Geography	3
Geography 52: World Regions	3
Geography 103–4: Cartography	6
Geography 113: Geomorphology	3
Geography 114: Weather and Climate	3
Geography 131: Conservation of Natural Resources	3
Geography 142: Urban Geography	3
*Six semester hours from the following	6
Geography 183: Western Europe	
Geography 184: The Mediterranean	
Geography 191: Middle America	
Geography 192: South America	
Geography 195: Eastern and Southeastern Asia	
Geography 197: The Pacific	
Geography 198: Australia	
*Six semester hours from the following	6
Geography 125: Economic Geography: Trade and Transportation	
Geography 126: Economic Geography: Raw Materials	
Geography 127: Economic Geography: Manufacture	
Geography 128: Economic Geography: Agriculture	
Geography 132: Land Use	
Geography 141: Geography of Settlement	
Total	36

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* Not required for the minor.

† May not be chosen as a minor field.

GERMAN

	Semester Hours
German 1–2: First-year German	6
German 3–4: Second-year German	6
German 9–10: German Conversation and Composition	6
German 51–52: Introduction to German Literature	6
*Additional courses in German, as approved by the adviser	12
Total	36

HISTORY

	Semester Hours
History 39–40: The Development of European Civilization	6
History 71–72: The Development of the Civilization of the United States	6
Six semester hours from each of the following groups, as approved by the adviser	18
Group 1—American History	
History 171–72: Social History of the United States	
History 173: Representative Americans	
History 174: Economic History of the United States	
History 181–82: Diplomatic History of the United States	
Group 2—European History	
History 109: Thought and Culture of the Western World I: Ancient Civilization	
History 110: Thought and Culture of the Western World II The Middle Ages and Renaissance	
History 130: Nationalism	
History 145–46: Russian History	
History 147: Economic History of Europe	
History 149–50: European Diplomatic History	
History 151–52: English History	
*Group 3—Latin American History	
History 163: Colonial Latin America	
History 164: South America since Independence	
History 166: Mexico and the Caribbean since Independence	
Political Science 178: Recent Trends in Latin American Politics and Government	
Political Science 178: International Politics in the Western Hemisphere	
*Additional semester hours from one of the foregoing groups, as approved by the adviser	6
Total	36

HOME ECONOMICS

	Semester Hours
Home Economics 1: Food Selection and Preparation	3
Home Economics 22: Clothing: Its Selection, Cost, and Care	3
Home Economics 51: Family Meals	3
Home Economics 53: Family Health and Household Sanitation	3
Home Economics 62: Clothing Construction	3
Home Economics 102: Advanced Food Preparation	3

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* Not required for the minor.

	Semester Hours
Home Economics 123: Household Finance and Problems of the Consumer	3
Home Economics 143: Advanced Clothing Construction	3
Home Economics 152: Nutrition	3
Home Economics 171: House Furnishing	3
Home Economics 181: The Child in the Home	3
Home Economics 192: The Home, Its Management and Equipment	3
Physiology 115: Physiology	3
Total	39

MATHEMATICS

	Semester Hours
Mathematics 3: College Algebra	3
Mathematics 6: Plane Trigonometry	3
Mathematics 12: Analytic Geometry	3
Mathematics 19: Differential Calculus	3
Mathematics 20: Integral Calculus	3
*Mathematics 102: Fundamental Concepts of Mathematics (or an alternative approved by the adviser)	3
*Mathematics 123: Theory of Equations, or *Mathematics 125: Advanced Algebra	3
*Mathematics 132: Differential Equations, or *Mathematics 139: Advanced Calculus	3
*An additional course in Mathematics, as approved by the adviser	3
Statistics 52: Mathematics of Finance	3
Total	30

PHYSICS

	Semester Hours
Physics 5, 6, 7, and 8: General Physics	12
Physics 55: Physical Measurements	3
Physics 101: Mechanics	3
Physics 105: Principles of Electricity	3
Physics 106: Optics	3
*Chemistry Elective—Chemistry 11–12: General Chemistry or Chemistry 12–21: General Chemistry and Qualitative Inorganic Analysis	8
Mathematics 12: Analytic Geometry	3
Mathematics 19: Differential Calculus	3
Mathematics 20: Integral Calculus	3
*Six semester hours from the following	6
Physics 102: Heat and Thermodynamics	
Physics 113: Atomic Physics	
Physics 114: Statistical Physics	
Physics 128: Sound	
Physics 132: Electronics	
Physics 155: Advanced Laboratory in Electricity and Magnetism	
Physics 156: Advanced Laboratory in Optics	
Total	47

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* Not required for the minor.

SOCIAL STUDIES

	Semester Hours
History 39–40: The Development of European Civilization	6
History 71–72: The Development of the Civilization of the United States	6
Political Science 9–10: Government of the United States	6
Twelve semester hours from the following	12
Economics 1–2: Principles of Economics	
Geography 51, 52: Introduction to Geography; World Regions	
Religion 59–60: History of Religion	
Sociology 1–2: Introductory Sociology	
*Additional second-group courses, as approved by the adviser, from one of the following fields: Economics, Geography, History, Political Science, Religion, Sociology	12
Total	42

SPANISH

	Semester Hours
Spanish 1–2: First-year Spanish	6
Spanish 3–4: Second-year Spanish	6
Spanish 9–10: Spanish Conversation and Composition	6
*Additional courses, as approved by the adviser	18
Total	36

SPEECH

	Semester Hours
Speech 1: Effective Speaking	3
Speech 2: Persuasive Speaking	3
Speech 11: Voice and Diction	3
Speech 32: Oral Reading	3
Speech 101: Voice and Phonetics	3
Speech 121: Group Discussion and Conference Leadership	3
Speech 153: Acting	3
Speech 175: Speech Correction	3
One of the following areas of specialization, as approved by the adviser:	
*Group 1—Speech Arts	
Twelve semester hours from the following	12
Speech 102: Oral Interpretation of Literature	
Speech 126: Public Discussion and Debate	
Speech 154: Play Production	
Speech 166: History of the Theater	
Speech 169: Creative Dramatics and Children's Theater	
*Group 2—Speech Correction	
Twelve semester hours from the following	12
Speech 176: Speech Correction	
Speech 177–78: Clinical Practice in Speech Therapy	
Speech 182: Hearing Problems and the Testing of Hearing	
Speech 183–84: Clinical Practice in Hearing Therapy	
Speech 191: Proseminar: Speech Correction	
Additional courses in English, Physiology, Psychology, or Speech, as approved by the adviser	
Total	36

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* Not required for the minor.

Professional Education

The basic professional information, skills, and attitudes needed by beginning teachers are provided through a sequence of courses to be taken in the junior and senior years. Lectures and class discussions are closely coordinated with field work. Instruction is differentiated to meet the needs of those preparing to teach on the various levels—elementary school, junior high school, senior high school, and adult.

PROFESSIONAL COURSES—SECONDARY		Semester Hours
Education 109–10:	Learning and Teaching	6
Education 121–22:	Society and the School	6
Education 131:	Common Teaching Skills	3
Education 133–34:	Observation and Student Teaching	6–9
Three to six semester hours from the following Special Methods courses		3–6
Education 136:	Teaching English	
Education 138:	Teaching Social Studies	
Education 140:	Teaching Mathematics	
Education 144:	Teaching Science	
Education 146:	Teaching Foreign Languages	
Education 148:	Teaching Home Economics	
Education 150:	Teaching Business Subjects	
Total		24–30

PROFESSIONAL COURSES—ELEMENTARY		
Education 109–10:	Learning and Teaching	6
Education 111:	Methods in Elementary Education	6
Education 121–22:	Society and the School	6
Education 133–34:	Observation and Student Teaching	6–9
Total		24–27

Bachelor of Science in Home Economics

The curriculum leading to this degree is designed to prepare young women for the important responsibility of home-making. The program can be adapted, however, to meet special requirements in nutrition, dietetics, clothing, and other related fields. Each student must plan her work with the assistance of a faculty adviser in the Department of Home Economics.

GENERAL HOME-MAKING

JUNIOR YEAR	Semester Hours	SENIOR YEAR	Semester Hours
Home Economics 53	3	Home Economics 152	3
Home Economics 72	3	Home Economics 171	3
Home Economics 102	3	Home Economics 181	3

	Semester Hours
Home Economics 123	3
Physiology 115	3
Elective	15
Total	30

	Semester Hours
Home Economics 192	3
Home Economics 197–98	6
Elective	12
Total	30

Bachelor of Science in Physical Education for Men

There are three curricula leading to this degree. The Single-Major and Subject-Certification Teacher's Curriculum is designed to prepare students for teaching positions in smaller schools where it is necessary to teach an academic subject in addition to physical education. The Single-Major Teacher's Curriculum prepares for the teaching of physical education in the larger schools. The Physical Education and Recreation Curriculum has been planned for those who wish to be prepared to direct programs of recreation in addition to the teaching of physical education.

The minimum requirements for this degree are 66 semester hours, distributed as follows:

SINGLE-MAJOR AND SUBJECT-CERTIFICATION TEACHER'S CURRICULUM

The minimum requirements for this degree are 21 semester hours in education, 24 hours in physical education, 18 hours in an academic teaching field, and 3 hours in physiology, distributed as follows:

JUNIOR YEAR	Semester Hours
Education 109–10	6
Education 121–22	6
Physical Education 103	3
Physical Education 105	3
Physical Education 107	1
Physical Education 113–14	4
Physiology 115	3
Academic teaching field	7
Total	33

SENIOR YEAR	Semester Hours
Education 131	3
Education 133–34	6
Physical Education 115–16	4
Physical Education 122	3
Physical Education 131	3
Physical Education 138	3
Academic teaching field	11
Total	33

SINGLE-MAJOR TEACHER'S CURRICULUM

The minimum requirements for this degree are 21 semester hours in education, 28 hours in physical education, 3 hours in physiology, and 14 hours of electives:

JUNIOR YEAR	Semester Hours
Education 109–10	6
Education 121–22	6
Physical Education 103	3
Physical Education 107	1
Physical Education 109–10	4
Physical Education 113–14	4
Physical Education 115–16	4
Physiology 115	3
Elective	2
Total	33

SENIOR YEAR	Semester Hours
Education 131	3
Education 133–34	6
Physical Education 105	3
Physical Education 122	3
Physical Education 131	3
Physical Education 138	3
Elective	12
Total	33

PHYSICAL EDUCATION AND RECREATION CURRICULUM

The minimum requirements for this curriculum are 66 semester hours, distributed as follows:

JUNIOR YEAR	Semester Hours
Education 109	3
Education 121–22	6
Physical Education 48	2
Physical Education 107	1
Physical Education 109–10	4
Physical Education 113–14	4
Physical Education 132	1
Physical Education 151–52	6
Elective	6
Total	33

SENIOR YEAR	Semester Hours
Education 131	3
Education 133–34	6
Physical Education 103	3
Physical Education 122	3
Physical Education 131	3
Physical Education 138	3
Physical Education 161	3
Physical Education 162	3
Elective	6
Total	33

Bachelor of Science in Physical Education for Women

There are three curricula leading to this degree. The Dual-Major Teacher's Curriculum is designed to prepare students for teaching positions in smaller schools where it is necessary to teach an academic subject in addition to physical education. The Single-Major Teacher's Curriculum prepares for the teaching of physical education in the larger schools. Within this curriculum there is opportunity for specialization in dance, sports, or correctives. The Physical Education and Recreation Curriculum has been planned for those who wish to be prepared to direct programs of recreation in addition to teaching physical education.

The minimum requirements for this degree are 66 semester hours distributed as follows:

DUAL- OR SINGLE-MAJOR TEACHER'S CURRICULUM

The student desiring to prepare herself to teach another subject in addition to Physical Education for Women may do so by choosing her elective hours from one-subject matter field with the advice of the Dean of the School of Education. Relevant work completed in the Junior College may be counted in this subject-matter field.

JUNIOR YEAR	Semester Hours
Education 109–10	6
Physical Education 58	2
Physical Education 101	3
Physical Education 103	3
Physical Education 105–6	6
Physical Education 107	1
Physical Education 111–12	2
Physical Education 117	1
Physical Education 118	1
Physical Education 132	1
Physiology 115	3
Elective	3
Total	32

SENIOR YEAR	Semester Hours
Education 121–22	6
Education 133–34	6
Physical Education 113–14	4
Physical Education 121	3
Physical Education 122	3
Physical Education 131	3
Physical Education 138	3
Elective	6
Total	34

PHYSICAL EDUCATION AND RECREATION CURRICULUM

JUNIOR YEAR	Semester Hours
Physical Education 48	2
Physical Education 58	2
Physical Education 101	3
Physical Education 105–6	6
Physical Education 107	1
Physical Education 109–10	4
Physical Education 111–12	2
Physical Education 117	1
Physical Education 118	1
Physical Education 151–52	6
Physiology 115	3
Elective	3
Total	34

SENIOR YEAR	Semester Hours
Education 121–22	6
Education 133–34	6
Physical Education 103	3
Physical Education 113–14	4
Physical Education 122	3
Physical Education 132	1
Physical Education 138	3
Physical Education 161	3
Physical Education 162	3
Total	32

THE DEGREE OF MASTER OF ARTS IN EDUCATION

Upon the satisfactory completion of the graduate requirements of the School of Education, the degree of Master of Arts in Education is conferred. This is a professional degree, designed to prepare the student for some particular type of educational service. The program of studies leading to the degree is selected by the candidate and his adviser from the various related departments of the University to give the student an adequate background in his chosen vocational field. For the prospective high school or junior high school teacher this will ordinarily include study in the subject which he is planning to teach as well as in the field of education.

In accordance with the foregoing general pattern of work, graduate programs of study are available in the following fields: (1) school administration—secondary school principalship or elementary school principalship; (2) adult education; (3) secondary education—senior or junior high school; (4) elementary education; (5) curriculum; (6) employee training; (7) guidance; (8) reading. Programs of work for teachers-in-service are differentiated from those for students without teaching experience. Additional information concerning these programs may be obtained by writing to the Dean.

ADMISSION TO CANDIDACY

The requirements for admission to candidacy for the Master's degree are stated on page 21. Those wishing to prepare for careers in guidance or administration must have had at least two years of successful teaching experience. Candidates who have had no professional courses must satisfactorily complete the required undergraduate professional courses, including Observation and Student Teaching, in addition to graduate course requirements.

ADVANCED STANDING

Graduate work completed in other accredited institutions of learning may be credited toward the Master's degree, but a minimum of 30 semester hours must be completed at The George Washington University as a matriculated candidate for the degree in the School of Education.

Advanced courses completed in this University in excess of the requirements for the Bachelor's degree may be credited toward the Master's degree to the extent of 12 semester hours, provided the work fits in with the student's plan of specialization and is approved in writing by the Dean before being undertaken.

In determining advanced standing at the time of admission or readmission to Master's candidacy at this University, graduate work completed more than three years previously is not counted.

REQUIREMENTS FOR THE DEGREE

PLANS OF STUDY

Two plans of study lead to the degree of Master of Arts. *Plan 1* requires a minimum of 30 hours of graduate credit, including a thesis carrying 6 hours of graduate credit. *Plan 2* requires a minimum of 33 hours of graduate credit, including the course in *Educational Research Methods and Procedures* carrying 3 hours of graduate credit.

Selection of Courses

Programs of study under *Plan 1* must include a minimum of 12 semester hours from third-group courses in addition to the thesis. Under *Plan 2* a minimum of 18 hours, in addition to the course in *Educational Research Methods and Procedures,* must be from third-group courses.

Programs of study must include a minimum of 12 hours selected from courses offered in the Department of Education.

When programs of study include additional academic preparation in one or more teaching fields, undergraduate and graduate courses combined must be at least equivalent to the undergraduate requirements of the Bachelor of Arts degree in the teaching field concerned.

Residence

Candidates for the degree of Master of Arts in Education must complete satisfactorily at this University a minimum of 30 semester hours, 9 of which, with the approval of the adviser, may be in the Off-Campus Division of the College of General Studies.

The Thesis

The thesis required under *Plan 1,* must conform to standards prescribed. A statement of these standards may be obtained at the Office of the Dean.

The thesis subject must be approved in writing by the candidate's adviser and recorded in the Office of the Registrar by the date announced in the University calendar. One typewritten original and two legible and complete carbon copies of the thesis in its final form (on official thesis paper) must be presented to the Dean by the candidate not later than the date announced in the University calendar. Requirements regarding the form of the thesis are stated on pages 53–54, and additional information will be supplied by the Dean.

Payment of tuition for the thesis will entitle the candidate, during the academic year of registration, to the advice and direction of the member of the Faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. The student must, however, be registered in residence during this period. If the preparation of the thesis extends beyond the two-year period it must be registered for again and tuition paid on the same basis as for a repeated course.

Comprehensive Examination

In addition to the course examinations, the candidate must pass a professional comprehensive examination in two parts: (1) a general examination concerned with an integrated understanding of the major areas in professional education, and (2) a special examination concerned with the candidate's area of specialization.

The general part of the comprehensive examination is divided into three groups as follows: Group I (Foundations) covers learning and teaching, society and the school, child and adolescent growth and development, history of education, philosophy of education, and educational research; Group II (Major Levels) covers elementary education, secondary education, adult education, employee training, and physical education; Group III (Common Elements) covers administration, curriculum, evaluation, guidance, methodology, and reading.

The candidate must be prepared to answer two questions in each group, none of which shall be concerned with his area of specialization.

Five-Year Program

A candidate entering the School of Education from the Junior College (or with equivalent preparation) may choose a three-year program leading to the degrees of Bachelor of Arts and Master of Arts in Education to be conferred simultaneously. The first year of this combined program will be devoted to teaching-field preparation; the work of the second year will include the Bachelor of Arts junior-year professional courses and a maximum of 18 semester hours of graduate courses; that of the third and final year, senior-year undergraduate professional courses and the remaining graduate courses needed for the Master's degree. Observation and Student Teaching to be elected in the third year may not be taken for graduate credit. A quality-point index of at least 2.50 in undergraduate courses must be attained before beginning the work of the senior year and the program must meet all the requirements for the degrees of Bachelor of Arts and Master of Arts in Education.

THE ADVANCED PROFESSIONAL CERTIFICATE

Upon the satisfactory completion of the program of advanced graduate studies of the School of Education, the Advanced Professional Certificate is granted. This program is designed to prepare teachers, and administrators for more effective service in their chosen fields and to enable them to qualify for a higher step in the local salary scale.

The program of studies leading to the certificate is selected by the candidate and his adviser from the various related departments of the University in accordance with the student's needs. In general it includes 30 hours of graduate credit beyond the Master's degree. The candidate wishing to increase his teaching proficiency may include additional study in his teaching field. For information concerning available programs, see the separate catalogue of the School of Education.

ADMISSION TO CANDIDACY

The requirements for admission to candidacy for the Advanced Professional Certificate are stated on page 21. The applicant who is unable to meet the admission requirements may be admitted with deficiencies to be met by satisfactorily completing prerequisites in addition to the specified program of graduate study. Each applicant must be interviewed by a member of the Faculty of the School of Education. The applicant seeking to qualify for a higher level in the local salary scale must have his program approved by the appropriate representative of the school system employing him.

TRANSFER OF CREDIT

Appropriate graduate work completed in other accredited higher institutions may be credited toward the requirements for the Certificate, but a minimum of 18 semester hours must be completed at The George Washington University as a matriculated candidate in the School of Education. The candidate is encouraged to include in his program study at other accredited higher institutions when such study seems to be in his best interest. In determining advanced standing at the time of admission or readmission to Certificate candidacy, graduate work completed more than three years previously is not counted.

REQUIREMENTS FOR THE CERTIFICATE

Plans of Study

In planning his program of studies the candidate should give first consideration to his particular needs. If he is a teacher and his graduate study leading to the Master's degree was largely in professional education, he may find it desirable to emphasize additional mastery of his teaching field. If his Master's preparation was in a content field, he may wish to devote a major part of his program to additional professional study. Those in administration and related services may wish to continue specialization on a more advanced level.

The program of study must include, in addition to any prerequisites, a minimum of 30 hours of graduate credit in third-group courses and not less than 12 hours in courses offered by the School of Education.

Residence

Candidates for the Advanced Professional Certificate must complete satisfactorily at this University a minimum of 18 semester hours in courses offered on the campus. The balance of the program may be in the Off-Campus Division of the College of General Studies or in other approved institutions of higher learning. The candidate is not required to pursue his program of study continuously. On request, a leave of absence is granted to the candidate for a period not to exceed three years.

THE DEGREE OF DOCTOR OF EDUCATION

The requirements for the degree of Doctor of Education cannot be stated in semester hours, but they consist in general of at least two full years of work beyond the degree of Master of Arts in Education or the equivalent. The programs of study are designed to prepare students for administrative or supervisory positions, the teaching of education in normal schools or colleges, the teaching of an academic subject in schools or colleges, or for specialized types of educational service. The work is given a practical rather than a theoretical bent, and emphasizes the mastery and application of subject matter, both in the study requirements and in the dissertation. Special emphasis is placed upon the professional success of the candidate.

The candidate's program of study depends for the most part upon his previous educational background and his professional objective. Opportunities are provided for study leading to the following professional objectives: school superintendent, secondary school principal, elementary school principal, supervisor, director of guidance, director of curriculum development, professor of education, and specialist in educational research.

Qualifications of the Applicant

The candidate for the degree of Doctor of Education must have completed (1) graduate work in fields prerequisite to his objective, equivalent to that required for the degree of Master of Arts in Education in The George Washington University, and (2) at least three years of successful educational experience.

Admission to Candidacy

To be admitted to candidacy for the degree the applicant must be accepted by the Committee on Graduate Studies on the basis of an examination which will usually include the following: (1) a written examination involving problems related to the applicant's background; (2) a scholastic-aptitude test; (3) an oral examination.

CONSULTATIVE COMMITTEE

If the applicant is accepted as a candidate, his consultative committee in cooperation with the candidate, will (1) determine the fields of study, in each of which the candidate must pass a written examination at least eight months before he presents himself for the degree; (2) formulate a list of course requirements and of readings that will assist him in preparing for these examinations; and (3) designate the tools of investigation that will be needed by the candidate in the prosecution of his study. These tools may include one foreign language or more, statistical methods, historical criticism, or any others considered essential by the committee. An examination in the tools designated must be passed by the candidate before he takes his final comprehensive examination.

THE DISSERTATION

When the candidate has satisfied the requirements of his consultative committee, the committee is dissolved. A member of the Faculty, in whose field the topic of the dissertation falls, is then appointed to serve as the candidate's adviser on his dissertation and in his field of specialization, and to recommend him to the Dean for the final oral examination when, in his judgment, the candidate's dissertation is acceptable.

Not later than the date specified in the University calendar the candidate shall submit to the Dean of the School of Education three copies of his dissertation—one typewritten original and two legible and complete carbon copies, on official thesis paper—and also a typewritten summary of the dissertation not to exceed 3,500 words. Requirements regarding the form of the dissertation are stated on pages 53–54, and additional information will be supplied by the Dean.

The successful candidate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

THE FINAL EXAMINATION

At least three weeks before the degree is to be conferred the candidate must pass an oral examination on his dissertation and on his field of specialization before a committee of the Faculty appointed by the Dean and supplemented by two experts from outside the University. This examination is open to the public and all are privileged to question the candidate. The Dean, or a member of the Faculty designated by him, will preside at this examination.

THE SCHOOL OF GOVERNMENT

THE FACULTY AND STAFF OF INSTRUCTION[*]

______________, *Dean of the School of Government*
Joe Lee Jessup, M.B.A., *Assistant Dean in the School of Government*

Richard Norman Owens, Ph.D., C.P.A., *Professor of Business Administration*
Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*
Warren Reed West, Ph.D., *Professor of Political Science*
Harold Griffith Sutton, M.S., *Professor of Finance*
Mitchell Dreese, Ph.D., *Professor of Educational Psychology*
Ralph Dale Kennedy, Ph.D., *Professor of Accounting*
Wood Gray, Ph.D., *Professor of American History*
Thelma Hunt, Ph.D., M.D., *Professor of Psychology*
Arthur Edward Burns, Ph.D., *Professor of Economics*
John Withrow Brewer, Ph.D., *Professor of International Law*
Harold Loran Geisert, Ph.D., *Professor of Sociology*
Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History*
Alan Thomas Deibert, A.M., *Professor of Romance Languages*
[†]Donald Stevenson Watson, Ph.D., *Professor of Economics*
Myron Law Koenig, Ph.D., *Professor of American History*
Arlin Rex Johnson, Ph.D., *Professor of Business Administration*
Everett Herschel Johnson, Ph.D., *Professor of Statistics*
Joe Lee Jessup, M.B.A., *Professor of Business Administration*
Robert Dale Campbell, Ph.D., *Professor of Geography*
Roderic Hollett Davison, Ph.D., *Professor of European History*
[‡]Wolfgang Herbert Kraus, Dr.Jur., S.J.D., *Professor of Political Science*
James Carlton Dockeray, Ph.D., *Professor of Finance*
David Springer Brown, Ph.D., *Professor of Public Administration*
Thomas Willard Holland, LL.B., Ph.D., *Professor of Labor Economics*
Henry Furness Hubbard, Ph.D., *Professorial Lecturer in Psychology*
Gerhard Colm, Dr.rer.pol., *Professorial Lecturer in Economics*
Orton Wells Boyd, A.M., C.P.A., *Professorial Lecturer in Accounting*
Montell Ernest Ogdon, Ph.D., *Professorial Lecturer in Business Administration*
Ralph Aubrey Young, Ph.D., *Professorial Lecturer in Economics*
Karl Ernest Stromsem, Ph.D., *Professorial Lecturer in Public Administration*

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[*] The President of the University, the Dean of Faculties, the Dean and Assistant Dean of the School, the Registrar of the University, the Director of Admissions of the University, Professors, Associate Professors, and Assistant Professors constitute the Faculty.

[†] On sabbatical leave spring semester 1958–59.

[‡] On Sabbatical leave 1958–59.

Joseph Leo Krieger, Ph.D., *Professorial Lecturer in Business Administration*
Edwin Lewis, M.B.A., *Professorial Lecturer in Accounting*
Carl William Clewlow, A.M., *Professorial Lecturer in Business Administration*
George Wythe, Ph.D., *Professorial Lecturer in Economics*
Forest Carlyle Brimacombe, M.B.A., *Professorial Lecturer in Accounting*
Ira Ernest Steele, A.M., *Professorial Lecturer in Accounting*
James Leonard Buckler, A.M., *Professorial Lecturer in Accounting*
Fernand Vincent Demaret, M.S., *Professorial Lecturer in Accounting*
Frank Higginbotham, M.S., C.P.A., *Professorial Lecturer in Accounting*
Harold Jerome Bobys, A.B., C.P.A., *Professorial Lecturer in Accounting*
Kenneth Frederick McClure, M.S., LL.B., *Professorial Lecturer on Commercial Law*
William George Torpey, Ph.D., *Professorial Lecturer in Public Administration*
Reuben Horchow, M.B.A., LL.B., *Professorial Lecturer in Business Administration*
Joseph Novak Stonesifer, A.M., *Professorial Lecturer in Business Administration*
Felix Ira Shaffner, Ph.D., *Professorial Lecturer in Business Administration*
Solomon Kullback, Ph.D., *Professorial Lecturer in Statistics*
Hans Heymann, Jr., M.I.A., *Professorial Lecturer in Economics*
Charles Edwin Houston, Ph.D., *Professorial Lecturer in Business Administration*
*Edward Campion Acheson, Ph.D., *Associate Professor of Finance*
Wolfram Karl Legner, Ph.D., *Associate Professor of German*
Carr Bartleson Lavell, A.M., *Associate Professor of Sociology*
Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
†James Norman Mosél, A.M., *Associate Professor of Psychology*
Rafael Supervía, Doctor en derecho, *Associate Professor of Spanish*
William Columbus Davis, Ph.D., *Associate Professor of Latin American History*
Ronald Bettes Thompson, Ph.D., *Associate Professor of European History*
Frederick Charles Kurtz, M.B.A., C.P.A., *Associate Professor of Accounting*
John Whitefield Kendrick, Ph.D., *Associate Professor of Economics*
Richard Catlin Haskett, Ph.D., *Associate Professor of American History*
Wilson Emerson Schmidt, Ph.D., *Associate Professor of Economics*
John Clayton, Ph.D., *Associate Professor of Business Administration*
Herbert Hubben, M.S., *Associate Professor of Public Administration*

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* On leave of absence 1958–59.
† On sabbatical leave 1958–59.

Leonard Prestwich, Ph.D., *Associate Professor of Business Administration*

Joseph Patrick Murphy, A.B., LL.B., LL.M., *Associate Professorial Lecturer on Commercial Law*

William Williams Edwards, A.M., *Associate Professorial Lecturer in Business Administration*

Roy Brandon Eastin, Ph.D., *Associate Professorial Lecturer in Public Administration*

Irving Samuel Schwartz, A.M., *Associate Professorial Lecturer in Public Administration*

Floyd Millard Riddick, Ph.D., *Associate Professorial Lecturer in Political Science*

Robert Kaye, A.M., *Associate Professorial Lecturer in Business Administration*

Robert Amendt Kinney, A.B., *Associate Professorial Lecturer in Political Science*

Leonard Cornelius Collins, A.B., LL.M., *Associate Professorial Lecturer on Commercial Law*

Howard Rowland Ludden, A.M., *Assistant Professor of Political Science*

Helen Bates Yakobson, B.S., *Assistant Professor of Russian*

John William Skinner, Ph.D., *Assistant Professor of Economics*

Harland Walter Westermann, A.M., *Assistant Professor of Geography*

Hugh Linus LeBlanc, A.M., *Assistant Professor of Political Science*

Wilbur Earle Benson, M.B.A., *Assistant Professor of Accounting*

Chester Hayden McCall, Jr., Ph.D., *Assistant Professor of Statistics*

Alfred Gaylord Obern, Ph.D., *Assistant Professor of Public Administration*

Robert Fenn Towson, Jr., M.B.A., *Assistant Professor of Business Administration*

Earl Elton Pontius, Jr., M.S., *Assistant Professor of Accounting*

Robert John Bond, A.B., *Lecturer in Business Administration*

William Spencer, A.M., *Lecturer in Political Science*

Payson Barber Langley, B.E., C.P.C.U., *Lecturer on Insurance*

Eric Theodore Hagberg, A.M., *Lecturer in Public Administration*

John Provan, M.S., *Lecturer in Public Administration*

COMMITTEES[*]

THE DEAN'S COUNCIL[†]

1958
David Springer Brown
Howard Rowland Ludden

1959
Frederick Charles Kurtz
Frederick Timberlake

1960
James Carlton Dockeray
Ronald Bettes Thompson

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[*] The Dean of the School of Government is a member ex officio of all committees.

[†] Elected by the Faculty.

COMMITTEE ON ADMISSION AND ADVANCED STANDING

John Withrow Brewer, *Chairman*

Howard Maxwell Merriman
David Springer Brown

COMMITTEE ON CURRICULUM AND PROGRAMS

Ralph Dale Kennedy, *Chairman*

John Withrow Brewer
Arlin Rex Johnson
James Carlton Dockeray
Donald Stevenson Watson
Everett Herschel Johnson
David Springer Brown

COMMITTEE ON DOCTORAL STUDIES

Everett Herschel Johnson, *Chairman*

Richard Norman Owens
Donald Stevenson Watson
Ralph Dale Kennedy
James Carlton Dockeray

EXECUTIVE COMMITTEE, BUREAU OF BUSINESS AND ECONOMIC RESEARCH

James Carlton Dockeray, *Chairman*

Richard Norman Owens
Donald Stevenson Watson
Ralph Dale Kennedy
Everett Herschel Johnson

GENERAL INFORMATION

INTRODUCTORY

The George Washington University has provided training in both foreign service and governmental theory and administration throughout its history. This was one of its purposes when chartered in 1821. The School of Government was established in 1928 to bring together in various undergraduate and graduate curricula the work offered in foreign service and much of the other academic work in the theory and administration of government.

It is the purpose of the School to give the student an understanding of his responsibilities under the Constitution of the United States in the conduct of public office, domestic and foreign, and to prepare students for careers not only in governmental service but also in related business and professional fields. This can be accomplished not through any single course but through curricula which correlate social, economic, political, historical, business, and psychological studies.

The program embraces both graduate and undergraduate work. Curricula leading to the degree of Bachelor of Arts in Government are offered in Foreign Affairs, Public Affairs, Accounting, Business Administration, and Business and Economic Statistics. Graduate work leading to a Master's degree is available in each of these fields and in Economic Policy, Public Administration, Personnel Administration, Counseling, and Psychometrics. Graduate study leading to the degree of Doctor of Business Administration is also available (see pages 199–200).

The Foreign Affairs program is broad, covering international political relations, international trade and finance, international communications, and regional studies. Its purpose is to equip students, by providing general background and specialized work, for careers in the field of American foreign relations. The diplomatic service of the United States, the several agencies of government with responsibilities in the international field, the international organizations, and American enterprise abroad offer opportunities in this field.

The Public Affairs program is a similar broad, composite curriculum covering the appropriate phases of domestic government and policy.

Governmental service requires special training and background in many other areas, including economic research, statistical investigation, accounting, administrative management, and personnel administration. The academic background for such work is offered in the various curricula of the School and is described below.

REGULATIONS

Students in the School of Government are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *stated on pages 13–28, and the University regulations stated on pages 48–55.*

AMOUNT OF WORK

A full-time student not on probation may take ordinarily not more than 17 semester hours. A student employed more than 24 hours a week, who is not on probation, may take not more than 10 semester hours.

A full-time undergraduate student whose quality-point index is 3.50 or higher may take not more than 19 semester hours. An undergraduate student employed more than 24 hours a week, whose quality-point index is 3.50 or higher, may take up to 12 semester hours.

A student previously unemployed who accepts employment subsequent to registration or at any time during a semester is required to report that fact immediately to the Dean, in order that adjustments in schedule may be made, if necessary, to bring his program within the Faculty's limitations upon the amount of work to be carried by an employed student. Exception to these rules will require the approval of the Dean.

Attendance

The student is held responsible for all the work of the courses in which he is registered, and all absences must be excused by the instructor in charge before provision is made for him to make up the work missed.

Classification of Students

A student who holds an Associate in Arts degree from the Junior College or the equivalent from another accredited institution, and who has registered his choice of one of the prescribed curricula at the Office of the Registrar, is classed as a *junior*. A student who has completed 30 semester hours in the School of Government is classed as a *senior*. A student who has satisfactorily completed the work for a Bachelor's degree and who has registered his choice of one of the prescribed fields of study at the Office of the Registrar, is classed as a *master in course*.

Independent Study Plan

Under the independent study plan a student of demonstrated capacity, with special interest in the subject matter of a course, may be permitted to undertake independent study under the personal direction of an instructor, in accordance with the rules of the department of instruction in which the subject falls. Credit under this plan is limited to the specific course credits as designated in the list of courses of instruction in this Catalogue.

THE DEGREE OF BACHELOR OF ARTS IN GOVERNMENT

Upon the satisfactory completion of the undergraduate requirements of the School of Government, the degree of Bachelor of Arts in Government, with a designation of the major field of study, is conferred. The major fields are Foreign Affairs, Public Affairs, Accounting, Business Administration, and Business and Economic Statistics.

Students who have a special need for integrating courses from several departments or from more than one major field may request approval, by a faculty committee, of a special major program. The same rules and regulations will apply as in the regularly offered majors.

REQUIREMENTS FOR THE DEGREE

Scholarship

The system of grading and of computing scholarship is described in detail on pages 48 and 49.

In order to graduate, a student must have the following: (1) a quality-point index in all of his work of at least 2.00 and (2) a quality-point index of at least 2.50 in his major. The major includes the required courses and courses taken in the group options.

Dean's Honor List.—The names of students who achieve a quality-point index of 3.50 or higher will be placed on the Dean's Honor List for that semester. Appearance on the List will be limited to (1) full-time students who have been registered for a minimum of 12 semester hours and (2) part-time students who have been registered for a minimum of 12 semester hours over a period of two consecutive semesters, which may include the summer term.

Probation.—A student must maintain a quality-point index of at least 2.00, or be placed on probation, where he will remain as long as his quality-point index is below 2.00.

Suspension.—A student who has a quality-point index below 1.50 or who is placed on probation for a third semester, whether successive or after an interval, will be suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. He must then submit evidence to the Committee on Admission and Advanced Standing that during his absence from the University, he has so conducted himself as to indicate that he will profit by readmission. A student suspended twice for poor scholarship will not be readmitted.

A student with a limited schedule is affected by the foregoing scholarship rules only when he has undertaken 15 semester hours.

RESIDENCE

For residence requirements, see the University regulations on pages 52 and 53.

CURRICULUM REQUIREMENTS

To be recommended by the Faculty for graduation, candidates in the School of Government are required to complete, in addition to the appropriate Junior College work (see curricula on pages 72 and 73), a minimum of 60 semester hours during the junior and senior college years, as set forth in one of the following curricula:

Foreign Affairs

		Semester Hours
Econ. 181–82	International Economics	6
Hist. 150	European Diplomatic History since 1878	
or Pol. Sc. 171	International Politics	3
Hist. 181–82	Diplomatic History of the United States	6
Pol. Sc. 172	International Organization: The United Nations	3

Pol. Sc. 181–82	International Law	6
Pol. Sc. 197	Proseminar in Foreign Affairs	3
Foreign Language	Composition and Conversation	6
Geography		3
Group Option	(To be selected from one of the following groups)	15
Electives	(To be selected in consultation with adviser)	9
	Total	60

All foreign affairs majors must complete the *required* courses listed above. The group option provides specialization in international politics, international economics, international communications, or a geographic region, depending upon the student's interest. Normally no more than six semester hours may be taken in an option other than the one selected. Consent of the adviser must be obtained for such modification of the option selected.

Group I—International Politics

This group option (15 semester hours as noted in list above) is composed of courses in the departments of Political Science, History, and Geography which are related to the study of American diplomatic relations. The selection of courses must be made in consultation with the adviser.

Group II—International Economic Relations

This group option (15 semester hours as noted in list above) is composed of courses offered primarily by the departments of Economics and Business and Public Administration which are related to the study of American economic, financial, and business relationships with foreign countries. The selection of courses must be made in consultation with the adviser.

Group III—International Communications

This group option (15 semester hours as noted in list above) is composed of courses offered primarily by the departments of Political Science, Psychology, Sociology, and Journalism which are related to the study of international information programs, public opinion, psychological warfare, cultural relations, and public relations. (It is recommended that the student include statistics in his Junior College program.) The selection of courses must be made in consultation with the adviser.

Group IV—Area or Regional Studies

This group option (15 semester hours as noted in the list above) may be selected from courses offered in the departments of Economics, History, Political Science, and Geography. Integrated programs of study are available in the following regions or areas: Europe and the Middle East, Asia and the Pacific Area, the Soviet Orbit, and Latin America. Modifications and combinations of these areas may be made if approved by the adviser, who must also approve the individual courses selected for the option. The foreign language, noted in list above, should be one that is suitable for study of the region or area selected.

Public Affairs

		Semester Hours
Econ. 121	Money and Banking	3
Econ. 161–62	Public Finance and Taxation	6
Econ. 165	Government Control of Economic Activity	3

Hist 172	Social History of the United States since 1861	
or Hist. 173	Representative Americans	
or Hist. 176	Political and Constitutional History of the United States since 1861	3
Pol. Sc. 121–22	The Constitution of the United States	6
Pol. Sc. 145	Political Parties and Politics	3
Pol. Sc. 151–52	Public Administration	6
Pol. Sc. 166	Field Work in Government	3
Group Option	(To be selected from one of the following groups)	15
Electives	(To be selected in consultation with adviser)	12
	Total	60

All public affairs majors must complete the *required* courses listed above. The group option provides specialization in domestic economics or politics. Modifications and substitutions may be made when appropriate or necessary provided the consent of the adviser is obtained.

Group I—Economics Option

		Semester Hours
Econ. 101	Economic Analysis	3
Econ. 105	Business Cycles	3
Econ. 141	Industrial Relations	3
Econ. 142	Labor Economics	3
Hist. 174	Economic History of the United States	3
	Total	15

Group II—Politics Option

		Semester Hours
Hist. 175–76	Political and Constitutional History of the United States	6
Pol. Sc. 111	Introduction to Comparative Government	3
Pol. Sc. 118	Political Theory	
or Pol. Sc. 120	Foundations of American Democracy	3
Pol. Sc. 146	Political Pressures and Public Reactions	
or Psych. 156	Psychology of Propaganda and Public Opinion	3
	Total	15

Business Administration

		Semester Hours
Bus. Adm 101	Business Organization and Combination	3
Bus. Adm. 102	Business Management	3
Bus. Adm. 105	Personnel Management in Industry	3
Bus. Adm. 131	Business Finance	3
Bus. Adm. 141	Principles of Marketing	3
Bus. Adm. 161–62	Commercial Law	6
Bus. Adm. 198	Problems in Business Management	3
Acct. 193	Business Budgeting	3
Econ. 121	Money and Banking	3
		30
Group Option	(to be selected from one of the following groups)	15
Electives	(to be selected in consultation with the adviser)	15
	Total	60

All Business Administration majors must complete the *required* courses listed above. The group options shown below provide specialization in several aspects of business. Selection of the option and the courses (15 semester hours) to be taken in it must be made in consultation with the adviser. Normally no more than 6 semester hours may be taken in an option other than the one selected. Consent of the adviser must be obtained if the student wishes such modification of his option group.

Group I—General Business

This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, Economics, and Statistics.

Group II—Personnel Management

This group option is made up of selected courses offered by the departments of Business and Public Administration, Economics, Psychology, Speech, and Statistics.

Group III—Finance

This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, Economics, Political Science, and Statistics.

Group IV—Marketing

This group option is made up of selected courses offered by the departments of Business and Public Administration, Economics, Geography, and Statistics.

Group V—Controllership

This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, and Economics.

Group VI—Economics

This group option is made up of selected courses offered by the departments of Economics and Business and Public Administration.

Group VII—Statistics

This group option is made up of selected courses offered by the Department of Statistics.

Group VIII—Transportation and Public Utilities

This group option is made up of selected courses offered by the departments of Business and Public Administration, Economics, Geography, History, and Statistics.

Foreign Commerce.—Business Administration majors who wish to specialize in foreign commerce may request a modification of the above requirements. The modified major excludes some of the above required courses and adds others, such as a third year of foreign language, foreign markets, exporting and importing, economic geography, and other courses relating to overseas trade. Each program must be approved by the adviser.

Accounting

			Semester Hours
Acct.	101	Cost Accounting	3
Acct.	111	Financial Statement Analysis	3
Acct.	121–22	Intermediate Accounting	6
Acct.	132	Accounting Theory	3

Acct. 171	Auditing	3
Acct. 181	Accounting Systems	3
Acct. 193	Business Budgeting	3
Bus. Adm. 102	Business Management	3
Bus. Adm. 131	Business Finance	3
Bus. Adm. 161–62	Commercial Law	6
Econ. 121	Money and Banking	3
		39
Group Option (to be selected from one of the following groups)		15
Electives (to be selected in consultation with the adviser)		6
	Total	60

All Accounting majors must complete the *required* courses listed above. The group options shown below provide specialization in public accounting, commercial and industrial accounting, and governmental accounting and budgeting. Selection of the option and the courses (15 semester hours) to be taken in it must be made in consultation with the adviser.

Group I—Public Accounting

This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, and Political Science.

Group II—Commercial and Industrial Accounting

This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, Economics, and Statistics.

Group III—Governmental Accounting and Budgeting

This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, Political Science, and Economics.

Business and Economic Statistics

		Semester Hours
Stat. 111	Business and Economic Statistics I	3
Stat. 112	Business and Economic Statistics II	3
Stat. 117	Analysis of Variance I	3
Stat. 118	Correlation and the Chi-square Test I	3
Stat. 195–96	Reading and Research in Business and Economic Statistics	6
Bus. Adm. 101	Business Organization and Combination	3
Bus. Adm. 102	Business Management	3
Econ. 101–2	Economic Analysis	6
Econ. 105	Business Cycles	3
Phil. 121–22	Logic and Scientific Method	6
Electives (A)	(To be selected from Statistics)	6
Electives (B)	(From Accounting, Business Administration, and Economics in consultation with the adviser)	15
	Total	60

EXAMINATIONS FOR WAIVING CURRICULUM REQUIREMENTS

A student wishing to omit a required course may take such examination as the department prescribes, and, on passing satisfactorily, he may be relieved of the curriculum requirement in that subject and may qualify for registration in an advanced course. Passing of this examination does not entitle the student to any hours of credit toward the degree. A student desiring to take such examinations should make the request of the Dean and pay the required fee.

Graduate Record Examinations

During the final semester of the senior year students in the School of Government are required to take the following Graduate Record Examinations: the Aptitude Test, which provides a measure of general scholastic ability at the graduate level; and Area Tests (achievement), which measure breadth of knowledge and understanding in three broad areas of the liberal arts: Natural Science, Social Science, and the Humanities. (For further information concerning the Graduate Record Examinations, see page 53.)

THE MASTER'S DEGREES

Upon the satisfactory completion of the graduate requirements of the School of Government, one of the following degrees is conferred: (1) Master of Arts in Government with a major in Foreign Affairs, Public Affairs, Economic Policy, Accounting, Business and Economic Statistics, Counseling, or Psychometrics; (2) Master of Arts in Public Administration; (3) Master of Arts in Personnel Administration; (4) Master of Business Administration.

Admission to Candidacy

A student is formally recognized as a candidate for the Master's degree only when his application for candidacy has been approved.

A 3.00 average in the undergraduate major is normally required for admission to graduate study.

The candidate for the Master's degree who is deficient in undergraduate preparation may take a comprehensive examination on his undergraduate major field. Passing of this examination entitles the student to admission without taking specific courses to make up his deficiencies.

In courses taken to satisfy undergraduate deficiencies, the student must maintain at least a 3.00 average to be eligible for admission to graduate study.

Candidates for the Master of Arts degree in Foreign Affairs, Public Affairs, or Economic Policy must show a reading knowledge (certified by the appropriate language department) of at least one modern foreign language, to be approved by the Dean. Such examination should be taken before the student begins the second 15 hours of his work. No student will be permitted to take the examination after three unsuccessful attempts.

REQUIREMENTS FOR THE DEGREES

A minimum of 30 semester hours of work, as outlined in the curricula on pages 195–99, must be completed successfully. Variations from these curricula require the permission of the Dean.

No part of the minimum requirements may be taken in any other institution.

A second-group course (numbered 101–200) may be counted toward the Master's degree only when registration for advanced credit has been approved at the beginning of the course by the Dean and by the officer of instruction, and provided that the student has done such extra work in the course as may be prescribed by the instructor.

All work for the Master's degrees must be completed in three years, unless an extension of time is granted by the Dean's Council. Validation examinations may be required.

In addition to the course examinations, the candidate must pass a comprehensive written examination in his major field. These examinations are scheduled two or more times a year (usually in December and in April), and should be taken shortly before or shortly after the completion of the prescribed course work. The candidate must consult with his adviser, well in advance, as to the date of his examination and the definition of the subject-matter fields which this examination is to cover. An oral examination on his thesis may also be required.

No work counted toward a Bachelor's degree may be counted toward a Master's degree.

A student who expects to continue his studies for the degree of Doctor of Philosophy (Graduate Council) or Doctor of Business Administration, after receiving the Master's degree, will be assisted in planning his program so that he may qualify for admission to candidacy for the Doctorate.

Residence

No credit is granted for work done *in absentia,* i.e., without formal instruction, except for the thesis, which may be completed *in absentia* with the permission of the department or committee concerned.

Scholarship

Grades for graduate work are "Excellent", "Satisfactory", and "Unsatisfactory"; for further details, see pages 48–49. A minimum of 6 of the first 30 semester hours of course work completed in the Master's program must be graded "Excellent".

A Master's candidate who has accumulated more than 6 semester hours of "Unsatisfactory" will be automatically suspended.

CURRICULUM REQUIREMENTS

A normal program includes a minimum of 24 semester hours of course work and the thesis (6 semester hours), to be selected from the courses listed under the chosen major field, and such other courses as may be necessary. Programs should be prepared in advance in consultation with the adviser and submitted to the Dean on the appropriate form; if the program is not completed at the time of registration this must be attended to not later than one month following registration.

THE THESIS

Students who plan to complete work for a Master's degree in one year should register for the thesis at the beginning of the year; otherwise the thesis should be registered for not later than the beginning of the final year. The choice of the thesis subject must be approved by the professor in charge and recorded in the Office of the Registrar by the date announced in the University calendar. The typewritten thesis in its final form must have the approval of the professor in charge and must be presented to the Dean by the student not later than the date announced in the University calendar. Requirements in regard to the form of the thesis are stated on pages 53–54, and additional information will be supplied by the Dean.

Payment of tuition for the thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the Faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year is granted without further tuition payment. The student must, however, be registered in residence during this period. If the preparation of the thesis extends beyond the two-year period, it must be registered for again, and tuition paid on the same basis as for a repeated course.

MASTER OF ARTS IN GOVERNMENT

This degree is offered in seven different curricula which are described below.

Students who have a special need for integrating courses from two or more of the major fields of concentration for the degree of Master of Arts in Government may request approval, by a faculty committee, of a special major program. All rules and regulations for the degree of Master of Arts in Government will apply to such special programs.

FOREIGN AFFAIRS

Prerequisite: an undergraduate major in foreign affairs, economics, history, or political science, depending upon the field of specialization. Any course deficiency in foreign affairs must be made up.

The program in Foriegn Affairs is offered in four fields of specialization: International Economics, International Politics, International Communications, and Regional Studies.

International Economics.—Graduate courses in economics (numbered over 200) in the field of international trade, the balance of payments, international financial policies, and international economic policies form the principal part of this specialization. Graduate courses in economic theory are recommended. Other courses may be included with the consent of the adviser.

International Politics.—Graduate courses in political science and history (numbered over 200), in international law, international politics, international organization, diplomatic history, and American foreign policy, comprise the principal requirements for this specialization. Related courses may be added with the consent of the adviser.

International Communications.—Graduate courses (numbered over 200) in political science, psychology, sociology, and geography with 12 hours (one-half of the course work) in the fields of public opinion, international information, psychological warfare, and communications, and 12 hours (one-half of the course work) in the fields of international politics and area studies. The adviser in all cases must approve the course selections.

Regional Studies.—Graduate courses in economics, political science, history, and geography (numbered over 200) dealing with a geographic region, such as Latin America, Europe and the Middle East, Asia, the Soviet Orbit, or the Pacific Area, comprise the principal requirements. Other courses of broader scope in economics, history, and political science are recommended as part of the program. The adviser in all cases must approve such selections.

The listing of graduate courses for these fields of specialization is given in the departmental offerings for Economics, History, Political Science, Geography, Psychology, and Sociology.

PUBLIC AFFAIRS

Prerequisite: an undergraduate major in public affairs, economics, history, or political science, depending upon the field of specialization. Any course deficiency in the Public Affairs Curriculum, as stated on pages 188–89 must be made up.

The program in Public Affairs is offered in two fields of specialization: Domestic Economics and Domestic Politics.

Graduate course required of all students: Political Science 205–6, The Federal Executive.

Recommended for Domestic Economics: courses in economic development, economic policy, public finance, and national income.

Recommended for Domestic Politics: courses in United States social, constitutional, and political history; comparative government; political theory; legislative organization; jurisprudence; political parties; and public opinion.

ECONOMIC POLICY

Prerequisite: an undergraduate major in economics or the equivalent.

Graduate courses in economics required: Economics 265–66, Economic Policy.

Recommended: courses in income and employment, national income, business cycles, monetary and fiscal policy, economic theory, and statistics. These courses and others that may be appropriate are to be selected with the consent of the adviser.

ACCOUNTING

Prerequisite: an undergraduate major in accounting or the equivalent. The program in Accounting requires the following courses:

		Semester Hours
Acct. 231	Contemporary Accounting Theory	3
Acct. 295–96	Seminar in Accounting	6
Acct. 299–300	Thesis	6

Of the remaining 15 semester hours, 9 must be in accounting and 6 in related fields selected with the approval of the adviser.

BUSINESS AND ECONOMIC STATISTICS

Prerequisite: an undergraduate major in business and economic statistics, or the equivalent; such work must include a minimum of 24 semester hours of second-group courses in statistics and a minimum of 18 semester hours in second-group courses in accounting, business administration, and economics.

The Master of Arts program requires at least 12 semester hours of graduate courses in statistics. The remaining 12 semester hours are to be selected from graduate work offered by the departments of Accounting, Business and Public Administration, Economics, and Statistics with the approval of the adviser.

COUNSELING

Prerequisite: an undergraduate major in psychology, business administration, or education; or an undergraduate major in the social sciences appropriate to specialization in this field. The undergraduate background should include necessary basic training in such fields as psychology, sociology, statistics, labor economics, and business management or public administration.

The Master of Arts program in Counseling requires the following courses:

		Semester Hours
Psych. 220	Seminar: Abnormal Psychology	
or		3
Psych. 225	Seminar: Mental Hygiene	3
Psych. 227	Seminar: Counseling and Guidance	3
Psych. 228	Seminar: Techniques of Counseling	
Psych. 229	Seminar: Occupational and Educational Information	3
Psych. 236	Seminar: Analysis of the Individual for Purposes of Counseling	3

The remaining 9 hours are elective, with the approval of the adviser.

PSYCHOMETRICS

Prerequisite: an undergraduate major in psychology, statistics, or the social sciences which includes twelve credits in psychology (general psychology, tests and measurements, personnel psychology, and related psychology courses); general statistics; mathematics through college algebra (preferably through calculus).

The Master of Arts program in Psychometrics requires the following courses:

		Semester Hours
Psych. 231	Test Construction	3
Psych. 234	Seminar: Test Theory	3
Psych. 246	Seminar: Personnel Measurement Techniques	3
Psych. 299–300	Thesis	6
Stat. 105	Statistics in Psychology and Education	3
Stat. 117	Analysis of Variance I	3
Stat. 118	Correlation and the Chi-square Test I	3

The remaining 6 hours are elective, with the approval of the adviser.

MASTER OF ARTS IN PUBLIC ADMINISTRATION

The purpose of the program in Public Administration is to prepare graduates to enter public service in the field of administration and to improve the competence of those already in public employment. The program assumes that effective performance at all levels of administration calls for an understanding of the human factors involved, a knowledge of the nature and institutional characteristics of administration in the public service, and an ability to apply the methods and techniques of management. An understanding of all three elements is provided by bringing together into the program different disciplines, including courses in political science, business and public administration, psychology, economics, accounting, and statistics.

Prerequisite: an undergraduate background in the social sciences, business administration or, in the absence of such course work, appropriate experience in government service.

The candidate for the degree must successfully complete a minimum of 30 hours at the graduate level. This will include 6 hours of thesis. Of the remaining 24 semester hours, students must select at least 6 hours from each of the three groups indicated below, and such other courses as are necessary to complete the program. Selection of all courses by the student must have the approval of the adviser.

GROUP I. HUMAN FACTORS IN ADMINISTRATION

		Semester Hours
Bus. Adm. 288	Executive Leadership	3
Psych. 228	Seminar: Techniques of Counseling	3
Pub. Adm. 231	Public Personnel Management	3
Pub. Adm. 232	Personnel Procedures and Problems	3
Pub. Adm. 233	Employee Development and Utilization	3
Pub. Adm. 237	Intermediate Management and Supervision	3
Pub. Adm. 241	Human Relations in Governmental Administration	3
Pub. Adm. 272	Reading and Conference Course in Public Personnel Administration	3

GROUP II. METHODS AND TOOLS OF MANAGEMENT

		Semester Hours
Acct. 141	Governmental Accounting	3
Acct. 246	Governmental Accounting and Budgeting Problems	3
Bus. Adm. 109	Office Management	3
Bus. Adm. 268	Management Engineering	3
Psych. 255	Seminar: Techniques of Opinion and Attitude Measurement	3
Pub. Adm. 215	Comparative Administrative Systems	3
Pub. Adm. 216	Administrative Analysis and Research	3
Pub. Adm. 217	New Tools of Management	3
Pub. Adm. 221–22	Staff Functions in Government	6
Pub. Adm. 254	Controllership in the Federal Services	3
Pub. Adm. 259	Government Procurement and Property Management	3
Stat. 109	Managerial Statistics	3

GROUP III. PROGRAM MANAGEMENT AND POLICY DIRECTION

		Semester Hours
Bus. Adm. 102	Business Management	3
Bus. Adm. 286	Management in the Armed Forces	3
Econ. 261–62	Public Finance and Fiscal Policy	6
Econ. 266	Problems of Governmental Economic Policy	3
Pol Sc. 162	Administrative Law	3
Pub. Adm. 210	The Management Function	3
Pub. Adm. 211	Problems of Governmental Organization	3
Pub. Adm. 212	Case Studies in Administration	3
Pub. Adm. 225–26	Internship in the Administrative Process	6
Pub. Adm. 251	Governmental Budgeting	3
Pub. Adm. 252	Planning and Administering the Agency Program	3
Pub. Adm. 260	Policy Formulation and Administration	3
Pub. Adm. 261	Public Opinion and the Administrator	3
Pub. Adm. 262	Contemporary Administrative Theory and Practice	3
Pub. Adm. 271	Reading and Conference Course in Public Management and Administration	3

MASTER OF ARTS IN PERSONNEL ADMINISTRATION

The purpose of the program for the degree of Master of Arts in Personnel Administration is to train graduates in personnel management techniques and problems. While the emphasis is placed on governmental personnel work, the curriculum may be adapted to the interest of graduates who plan a career in personnel relations in business.

Prerequisite: an undergraduate background in the social sciences or, in the absence of such course work, appropriate experience in personnel work. Specific course prerequisites will be required.

In addition to the thesis, the program requires 24 graduate credits, in general developed from the following, with the approval of the adviser:

		Semester Hours
Bus. Adm. 291–92	Seminar in Business Management	6
Econ. 241	Labor Economics	3
Econ. 244	Collective Bargaining	3
Psych. 227	Seminar: Counseling and Guidance	3
Psych. 244	Seminar: Job Analysis and Evaluation	3
Psych. 245	Seminar: Employee Motivation and Morale	3
Psych. 246	Seminar: Personnel Measurement Techniques	3
Pub. Adm. 210	The Management Function	3
Pub. Adm. 231	Public Personnel Management	3
Pub. Adm. 232	Personnel Procedures and Problems	3
Pub. Adm. 233	Employee Development and Utilization	3
Pub. Adm. 241	Human Relations in Governmental Administration	3
Pub. Adm. 272	Reading and Conference Course in Public Personnel Administration	3

MASTER OF BUSINESS ADMINISTRATION

This curriculum provides the graduate student with the general and specialized training which will help him advance to responsible positions in business. The program is also valuable for many positions in government, particularly those in "business-type" operations.

The Master of Business Administration program is sufficiently flexible to meet the basic requirements of any vocational objective requiring a knowledge of management principles. While most students in this program will normally take Business Administration 201, Advanced Management, and Business Administration 291–92, Seminar in Management, and other courses in Business Administration, the individual program should be planned with an adviser so as to include graduate courses offered by other departments wherever appropriate. Particular attention should be given the offerings under Public Administration, Economics, Accounting, Statistics, and Psychology.

The degree of Master of Business Administration is granted upon successful completion of 24 hours of course work and 6 hours of *Thesis*. An individual program should be planned in consultation with an adviser. The thesis area as well as the thesis subject should be selected as early as possible so as to permit effective integration with the course work. Students who do not present a satisfactory undergraduate major will be required to take prerequisite courses, which will be selected in accordance with individual qualification and work experience.

DOCTOR OF BUSINESS ADMINISTRATION

The work for this degree is under the supervision of the Committee on Doctoral Studies of the School of Government.

An applicant must have the degree of Master of Business Administration, Master of Arts in Business Administration, or Master of Arts in a related field, or the equivalent of such degrees, together with acceptable personal qualities and a capacity for creative scholarship. Each applicant must demonstrate his competence in Statistics and Accounting by qualifying examinations. He must satisfy this requirement in at least one of the two subjects before his application to study for the degree of Doctor of Business Administration will be considered.

After admitting an applicant, the Committee on Doctoral Studies, in consultation with the applicant, will designate six fields of study and appoint an adviser to guide the student in his work in these fields. As part of this work, the student must complete a minimum of 30 semester hours in graduate courses. Additional course work may be prescribed by the adviser.

When the applicant has satisfied his adviser and the Committee of his readiness to take the General Examination, this Examination will be scheduled.

The General Examination is a written comprehensive on fields of study not limited to the subject matter of courses taken in these fields. Two fields of study are required of all applicants: Economic Theory and Business and Economic History. The four additional fields, selected by the Committee and the applicant, will be drawn from the following list: Marketing, Organization and Management, Business Finance and Investments, Personnel Management, Public Administration, Accounting Theory, Money and Banking, Statistics, Risk and Risk Bearing, Transportation and Traffic Management, and such others as the Committee may designate.

Upon successful completion of the General Examination and approval of the subject of the doctoral dissertation, the student may be admitted to candidacy by the Committee on Doctoral Studies. The candidate's research and the preparation of his dissertation are supervised by a Research Adviser designated by the Committee.

The Final Examination of the candidate consists of his oral defense of the disseration. The examination will be given by a committee appointed by the Committee on Doctoral Studies. Upon successful completion of this oral examination the candidate will be approved for the degree of Doctor of Business Administration by the Committee on Doctoral Studies.

SPECIAL PROGRAMS

The Government Management Intern Scholarship Program offers annually fifty scholarships to assist federal agencies in training carefully selected young men and women for administrative leadership in government career service. Each scholarship provides a tuition-free course of 3 hours a semester and appropriate academic credit (up to 6 semester hours) for the successful completion of training assignments required in any agency which has been evaluated by the University.

The Navy Graduate Comptrollership Program, sponsored by the Naval Post Graduate School, provides 50 semester hours of work in comptrollership and related fields for a selected group of Naval and Marine officers. The Master's degree is awarded upon successful completion of this full-year program.

In cooperation with the College of General Studies, the School of Government conducts the Air Force Resources Management Program, under the sponsorship of the Department of the Air Force.

The Air Force Advanced Management Program, sponsored by the United States Air Force Institute of Technology, provides 50 semester hours of work in advanced management and supporting fields for a selected group of Air Force officers. Most of the officers receive the Master's degree upon successful completion of this full-year program.

The School of Government cooperates with the College of General Studies in the Off-Campus program of that College, particularly in the fields of controllership, governmental administration, and personnel administration.

The Department of Business and Public Administration offers work in the field of property and casualty insurance as part of the educational program of the American Institute for Property and Liability Underwriters, Inc.

BUREAU OF BUSINESS AND ECONOMIC RESEARCH

The Bureau, as part of the School of Government, was established to conduct research in both the fields of business and economics. This work is under the direction of the Executive Committee of the Bureau of Business and Economic Research. Special attention is given to problems of the metropolitan area of Washington, D. C. Research projects are also sponsored by public and private agencies. Both faculty and students of the School of Government participate in the activities of the Bureau of Business and Economic Research. Results of research activities as well as abstracts of selected Masters' theses are reproduced and disseminated by the Bureau.

THE COLLEGE OF GENERAL STUDIES

Grover LaMarr Angel, A.M., Ed.D., *Dean of the College of General Studies*
Walter Harold Hayes, Jr., A.M., *Assistant Dean in the College of General Studies*
Robert Clinton Rutledge, A.M., *Director of the Off-Campus Division*
Mary Ellen Coleman, A.M., *Director of the Reading Clinic*
Howard Belding Gill, M.B.A., *Director of the Institute of Correctional Administration*

THE DEAN'S COUNCIL *

Benjamin Douglass Van Evera
Arlin Rex Johnson
Don Carlos Faith
Carl Hugo Walther
Blake Smith Root
Philip Henry Highfill, Jr.

GENERAL INFORMATION

INTRODUCTORY

The objectives of the College of General Studies may be stated briefly as follows: to extend the adult education facilities of the University; to introduce experimental procedures in conducting programs of study for mature students; and to provide auxiliary educational services other than formal programs of study for the community.

To carry out these objectives the College of General Studies, with offices located at 706 Twentieth Street NW., is organized to include the following divisions: the Off-Campus Division; the Campus Division; and the Division of Community Services.

Off-Campus Division

In recent years, employee in-service training has been increasingly emphasized in government, education, business, and industry. Service personnel in nearby military installations have likewise been increasingly interested in off-duty education as a means of working toward academic degrees and increased professional proficiency. The Off-Campus Division of the College of General Studies works closely with personnel administrators, training officers, school officials, and others interested in developing programs of in-service training and brings the educational resources of the University to bear on such programs. Credit and noncredit courses are organized in any field in which there is sufficient demand and for which instructional facilities can be made available. These courses meet at the time and place most convenient for the students enrolled and may begin at any time of the year. Credit courses are accepted by any school or college of the University provided (1) the student is accepted for degree candidacy in that school or college; (2) the courses in question are within the scope of the curriculum requirements; and (3) the maximum number of semester hours which can be taken in any school or college of the University, other than that in which the student is a degree candidate, is not exceeded. Credit courses may also be transferred to other colleges and universities.

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* The Dean of Faculties, the Dean and the Assistant Dean of the College are members ex officio of the Council.

Admission to Course Work

Admission to an off-campus course does not constitute admission to degree candidacy or permission to attend classes on campus.

A simplified procedure for admission and registration in off-campus courses is conducted at or prior to the first meeting of the class. Transcripts of previous academic work are not required. Registration in credit courses is restricted to those whose qualifications indicate that they are able to complete the course successfully. In general, off-campus noncredit courses are open to any individual interested in enrolling. However, when a course is organized at the request of some particular agency or group, admission may be restricted to the students recommended by the sponsoring organization. A limit on the size of classes may have to be imposed in order to maintain the quality of instruction.

Admission to Degree Candidacy

In agencies and service installations where there is sufficient enrollment to permit offering the necessary range of courses, it is possible to earn the Associate in Arts, Associate in Science, Bachelor of Arts, Bachelor of Science in Cartography, and Master of Arts in the fields of Controllership, Governmental Administration, and Personnel Management, without campus studies. For further information, see the bulletin of the College of General Studies.

CAMPUS DIVISION

This Division has been established in recognition of the fact that there are adults, well qualified to undertake a particular program of college work, whose academic preparation would not ordinarily qualify them for admission to a previously established school or college of the University, without considerable prerequisite work. It is also recognized that an adult, through his work experience, may have gained competency in some particular area of learning. This knowledge may be validated by special examinations to entitle him to advanced standing toward a degree. For further information, see the bulletin of the College of General Studies.

DIVISION OF COMMUNITY SERVICES

This Division was organized to provide needed auxiliary educational services and to promote programs designed to supplement the formal educational offerings of the University.

Noncredit courses in a wide variety of subject fields will be set up at the request of any interested group. There will be no entrance requirements. The length of each course will be determined by the wishes of the sponsoring group and the nature of the subject to be studied.

The George Washington University Reading Clinic offers both diagnostic and corrective work for small groups or individuals and reading improvement techniques for small classes. All courses are designed to meet particular individual needs whether on a remedial basis or for accelerated reading comprehension. (See page 219.)

FEES

The tuition fee for off-campus credit courses is $14 a semester hour. The fees for noncredit courses and eight-week credit courses are payable in full at the first meeting of the course. By special arrangement in fifteen-week credit courses, payments may be made in three equal installments.

THE DIVISION OF UNIVERSITY STUDENTS

Elmer Louis Kayser, Ph.D., LL.D., *Dean of the Division of University Students*

John Gage Allee, Jr., Ph.D., *Associate Dean of the Division of University Students*

THE DEAN'S COUNCIL*

Ralph Dale Kennedy
Francis Edgar Johnston
Ira Bowers Hansen

GENERAL INFORMATION

INTRODUCTORY

The Division of University Students was established in 1930. In this Division are registered mature students who wish to undertake university courses for credit either here or elsewhere or as auditors, but who are not at this time working toward degrees in this University.

REGULATIONS

Students in the Division of University Students are subject to, and are expected to familiarize themselves with, the regulations concerning Admission, Registration, Fees and Finances *stated on pages 13–28; the University regulations stated on pages 48–55; and the regulations concerning* Probation and Suspension *which are the same as those stated on page 66 under the Junior College.*

Transfer to Regular Status

A "University student" may be transferred, at his request, to another college or school of the University only upon complying with the regulations of the specific college or school to which he wishes to transfer. The student should familiarize himself with the regulations printed in the University Catalogue concerning admission, residence, amount and quality of work. He should also specifically note the University regulations regarding transfers within the University on pages 50–51, and regarding graduation requirements on pages 52–53, and observe that when a student transfers into a degree-granting school or college, to be eligible for a degree he must meet not only all the general graduation requirements, but also such special requirements as may apply in his particular curriculum.

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*The Dean of Faculties, the Dean and the Associate Dean of the Division are members ex officio of the Council.

THE DIVISION OF SPECIAL STUDENTS

Warren Reed West, Ph.D., *Dean of the Division of Special Students*

THE DEAN'S COUNCIL*

Thelma Hunt
Albert Christian Murdaugh
Fred Salisbury Tupper

GENERAL INFORMATION

INTRODUCTORY

The Division of Special Students was organized in 1944. To this Division may be admitted students who are in the process of qualifying for degree candidacy. Students in this Division are designated "special students".

REGULATIONS

Students in the Division of Special Students are subject to, and are expected to familiarize themselves with, the regulations concerning ADMISSION, REGISTRATION, FEES AND FINANCES *stated on pages 13–28; and the University regulations stated on pages 48–55.*

SCHOLARSHIP

A student in this Division may be dropped for reasons of scholarship if his quality-point index falls below 2.00.

The system of grading and computing scholarship is described in detail on pages 48 and 49.

ACADEMIC SCHEDULE

The schedule of the "special student" is made up of courses required in the curriculum to which he wishes to transfer. The choice of courses must be approved by the Dean. If the student has not completed the language reguirements of this curriculum at the time of his admission to the University, he must include three hours of language in each twelve hours of work until this requirement is met. Second- or third-group courses may not be taken unless all first-group requirements have been met or are being met concurrently.

Credits earned at other institutions are evaluated at the time of admission to this Division. They are withheld until the "special student" transfers to a degree-granting college or school, when those appropriate to his curriculum are applied toward advanced standing.

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* The Dean of Faculties, and the Dean of the Division are members ex officio of the Council.

In each individual case, the schedule will be reduced when it is deemed advisable.

TRANSFER TO REGULAR STATUS

A "special student" may transfer to a degree-granting college or school of the University when he has satisfactorily completed his program in the Division of Special Students and has met the admission requirements of the college or school to which he wishes to transfer. The student should familiarize himself with regulations printed in the University CATALOGUE concerning admission, residence, amount and quality of work. He should also specifically note the University regulations regarding transfer within the University on pages 50–51 and regarding graduation requirements on pages 52–53, and observe that when a student transfers into a degree-granting school or college, to be eligible for a degree he must meet not only all the general graduation requirements, but also such special requirements as may apply in his particular curriculum.

ADVISORY SYSTEM

Students in the Division of Special Students are expected to consult with an adviser in the Office of the Dean at least once each semester. Any student who has a question in regard to his status, or whose grades are below *C*, or who is in academic difficulty, is urged to make an appointment promptly without waiting for a request from the Dean.

DIVISION OF AIR SCIENCE

Carl Swyter, B.S. in E.E., Colonel, United States Air Force, *Director of Air Science*

Military Service Delay and Air Force ROTC Advanced Course Selection Board *

Robert Henry Mucha, *Chairman*

Calvin Darlington Linton	Martin Alexander Mason
George Martin Koehl	Thomas Gudgel Martin

William Wightman Richardson III, *Recorder*

GENERAL INFORMATION

INTRODUCTORY

The Air Force Reserve Officers Training Corps (Air Force ROTC) unit was established at the University in 1951 under authority of Section 40–47C, National Defense Act of June 3, 1916, as amended. Air Force personnel, approved by the President of the University, are assigned by the Department of the Air Force to supervise and conduct the Air Force ROTC program.

The mission of the Air Force ROTC program is to select and prepare students through a permanent program of instruction to serve as commissioned officers in the Regular and Reserve components of the United States Air Force. Classroom instruction and leadership training are provided to develop in the student the knowledge and the attributes of character, personality, and leadership required of officers in the United States Air Force.

Course of Study

The course of study is divided into a basic course covering the first two years and an advanced course covering the junior year, summer training unit, and senior year. Twenty-four hours of elective credit earned in this program may be applied toward a degree, 3 hours a semester for the basic course and 3 hours a semester for the advanced course.

The program takes into consideration the fact that many of the academic subjects in which college students are enrolled have a direct relationship to military as well as to civilian careers. The courses of the Air Force ROTC program have been carefully selected to supplement those academic subjects. They also afford a means for practical training in organization, leadership, and discipline, which will be of value in industrial or professional careers. The duties and responsibilities of squadron level officers, oral and written expression, and the techniques of problem solving are emphasized throughout the course both in theory and practice.

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* The President of the University, the Dean of Faculties, and the Director of the Division are members ex officio of this Board.

See "Department of Air Science" for a list of the subjects covered. In addition thereto, orientation flights and field trips to Air Force bases are available to selected cadets on a voluntary basis.

ELIGIBILITY REQUIREMENTS

Enrollment in the Division of Air Science is open to all men students and a limited number of women students, who are at least 14 years of age, physically fit, of good character, and candidates for Bachelor's degrees. Men and women enrolled in Air Force ROTC are designated Cadets and Cadettes, respectively. Cadets who successfully complete the basic course or have equivalent active military training may be selected to enter the advanced course. Cadets in the advanced course receive from the Government a subsistence allowance of approximately $500, which is exempt from income tax. During the period of summer training the advanced cadet receives, in addition, $75 a month, plus food, lodging, and travel expense. Uniforms, textbooks, and training materials are provided for all Air Science courses.

A cadet enrolling in the basic course agrees to successfully complete the two-year course as a prerequisite to graduation from the University. A cadet applying for enrollment in the advanced course must, if selected, sign a contract to complete the course as a prerequisite to graduation; attend a four-week summer training unit; and fulfill the obligations conjunctive with military service delay specified below.

In addition, a cadet who applies and is accepted for enrollment in the advanced course in the category leading to pilot training may be required to pursue a 35 hour course of flying instruction during his senior year. This flying instruction is provided by a Civil Aeronautics Administration approved school at government expense and leads to qualification for a private pilot's certificate.

A limited number of junior women may enroll in the Air Force ROTC advanced course and, upon successful completion thereof and completion of requirements for a Bachelor's degree, may be commissioned as second lieutenants in the United States Air Force Reserve.

MILITARY SERVICE DELAY

Deferment from induction under the Selective Service Act of 1951 may be granted to selected cadets within authorized quotas. Normally, a cadet is not considered for draft deferment until he has completed one semester's work in the University, with a quality-point index of at least 2.00. A cadet's deferment is subject to withdrawal if his quality-point index falls below 2.00.

STUDENT HONORARY MILITARY SOCIETIES

The Arnold Air Society.—A national honorary military society of Advanced Air Force ROTC cadets established to further the mission, traditions, and concept of the United States Air Force as a means of national defense, to promote American citizenship, and to create a close and more rewarding relationship among the Air Force ROTC cadets. The national organization founded in 1947, was named in honor of the late General of the Air Force Henry Harley Arnold. The local squadron established in 1952, was named in honor of General Carl Spaatz (retired), the first Chief of Staff of the United States Air Force. Only advanced Air Force ROTC cadets are eligible for election to membership. Members are authorized to wear a blue and gold auguilette and ribbon on their cadet uniforms.

Pershing Rifles.—A national honorary military society founded in 1894 by Lieutenant (later General of the Armies) John Joseph Pershing. Its purpose is to encourage, preserve, and develop the highest ideals of the military profession, promote American citizenship, create a closer and more efficient relationship, and provide appropriate recognition of a high degree of cadet achievement. Only basic ROTC cadets are eligible for election to membership. Members are authorized to wear a blue and silver cord and ribbon on their cadet uniforms.

Flying Sponsors.—A local women's honorary organization established in 1952 to sponsor Air Force ROTC activities.

REGULATIONS

Cadets and students in the Division of Air Science are subject to and are expected to familiarize themselves with the University regulations stated on pages 13–28 and 48–55; the regulations of the college, school, or division in which enrolled; and the regulations of the United States Air Force pertaining to Air Force ROTC cadets. Individual copies of Cadet Regulations are issued upon enrollment.

THE SUMMER SESSIONS

Burnice Herman Jarman, A.M., Ed.D., *Dean of the Summer Sessions*

THE DEAN'S COUNCIL*

Wood Gray	Ira Bowers Hansen

During the summer of 1958 the University offers an eight-week session for undergraduate and graduate students in the Arts and Sciences. The Law School offers work in two six-week sessions. The School of Education offers a special six-week session for teachers, with a pre-session of three weeks, post-session of three weeks, and a twelve-week evening session.

During the summer of 1958, courses are offered in the Junior College, Columbian College (the senior college), the Law School, the School of Engineering, the School of Pharmacy, the School of Education, the School of Government, and the College of General Studies.

For a complete statement concerning summer-term work, see the Summer Sessions catalogue.

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* The Dean of Faculties, the Dean of the Summer Sessions, are members ex officio of the Council.

ADMINISTRATIVE UNITS

HEALTH ADMINISTRATION

Richard Bernard Castell, A.B., M.D., *University Physician, Director*
Benjamin Franklin Dean, Jr., M.S., M.D., *University Surgeon*
Herbert Lamont Pugh, B.S., M.D., *University Physician*
Margaret Elizabeth Callan A.B., M.D., *Associate University Physician*
Robert Howe Harmon, A.B., M.D., *Associate University Physician*
Ronald Atmore Cox, A.B., M.D., *Associate University Physician (Eye)*
Alfred Brigulio, M.D., *Associate University Physician*
Hugh Osgood House, A.B., M.D., *Associate University Physician (Nose and Throat)*
Jerome Blaine Harrell, M.D., *Associate University Surgeon*
Beatrice McBride, R.N., *Nurse-Secretary*

The University maintains a health service that is primarily diagnostic in its intent. For medical emergencies and health consultations there is, on the Campus, a Student Health Clinic open from 9:00 A.M. to 5:00 P.M. with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge.

Medical privileges include: (1) the physical examination of every student entering from secondary school;* (2) three visits by the University physician or surgeon, office or residence (District of Columbia), in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination; (3) hospitalization, including board and nursing, in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Administration. All additional hospital charges for operating room, laboratory, anesthetics, X-ray, medications, or any other special service must be paid by the student. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

This medical benefit does not apply to illness or disability incurred previous to the University term or prior to payment of tuition fees.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) the above regulations apply also during the summer term of the University.

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* A charge of $2 for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for this purpose.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the physical education departments.

VETERANS EDUCATION

Don Carlos Faith, Ph.D., *Director of Veterans Education*

The George Washington University is approved to provide training for eligible persons under the provisions of Public Laws 346, 16, 550, 894, and 634. The Office of Veterans Education, Building Q, 2029 H Street NW., operates as a service bureau for such persons interested in studying at the University and acts in a liaison capacity between the University and the Veterans Administration.

Eligible persons are advised to consult this Office concerning the educational program of the University and the procedure for securing Veterans Administration educational benefits before applying to the Veterans Administration for certification. The Veterans Administration is on Constitution Avenue at Twentieth Street NW., Washington 25, D.C.

PUBLIC LAW 634

(War Orphans Educational Assistance Act)

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict may be eligible for educational assistance under this Act, if certain age requirements are met. In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration. For further information concerning eligibility or benefits available under this Law, consult the University Office of Veterans Education or the Veterans Administration.

PUBLIC LAW 346

(World War II GI Bill)

The educational benefits for veterans under Public Law 346 terminated July 25, 1956, except as described below.

The Armed Forces Voluntary Recruitment Act of 1945 (Public Law 190) provided that persons enlisting or reenlisting in the Armed Forces between October 6, 1945, and October 5, 1946, may count the entire period of such enlistment or reenlistment as war service for purposes of GI Bill benefits. Such enlistees have four years from the date that enlistment ended to begin training and nine years from that separation date to complete training under this provision.

It is suggested that a veteran having any question regarding his eligibility consult the University Office of Veterans Education or the Veterans Administration.

PUBLIC LAW 550

(Korean GI Bill)

In order to be eligible for the benefits under this Law, a veteran must have been in service between June 27, 1950 and January 31, 1955, and must no longer be on active duty.

At least thirty days prior to registration the veteran wishing to attend under this Law should apply to the Veterans Administration for a Certificate for Education and Training, for presentation to the University Office of Veterans Education at the time of registration. A photostatic copy of his DD214 must accompany the original application for certification.

PUBLIC LAWS 16 AND 894

(Vocational Rehabilitation)

Disabled veterans desiring vocational rehabilitation under either Law should apply to the Veterans Administration for approval of their training objectives at least sixty days prior to registration.

SERVICE SCHOOL CREDITS

A limited amount of credit earned in service schools since 1941 may be considered for assignment to qualified degree candidates in accordance with faculty regulations of the Junior College, Columbian College, the School of Engineering, and the School of Government. To be considered for such credit, veterans should submit to the Director of Admissions photostatic copies of their service school records, indicating courses successfully completed with sufficient identification of the course to locate it in the Guide to Evaluation of Educational Experience in the Armed Forces.

COMMUNITY AND UNIVERSITY SERVICES

THE READING CLINIC

Mary Ellen Coleman, A.M., *Director of the Reading Clinic*

The Reading Clinic, 802 Twenty-first Street NW., offers individual diagnostic and corrective services for all levels: primary, elementary, secondary, and adult. In addition special reading improvement classes are conducted on the high school and adult level.

A complete diagnosis includes psychological tests; vision, hearing, and dominance tests as well as the various reading and spelling tests. Results are interpreted and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students and adults are offered throughout the year at stated intervals. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are also used for increasing speed of comprehension.

Fees.—The fee for individual diagnosis is $30; for individual instruction, $4 an hour; for instruction in small groups with common reading difficulties, $2.50 an hour; for materials, $4. All fees are payable in advance at the Office of the Cashier.

THE SPEECH CLINIC

Calvin Weir Pettit, Ph.D., *Director of the Speech Clinic*

The Speech Clinic, Lisner Auditorium, 730 Twenty-first Street NW., offers diagnostic and corrective work for children and adults with such speech difficulties as stuttering, lisping, cleft palate, cerebral palsy, asphasia, foreign accent, voice, and articulatory problems.

Fees.—There is no charge for the diagnosis. The fee for individual instruction is $7 an hour; for group instruction, $4 an hour. Fees are payable at the Office of the Cashier.

THE TESTING AND COUNSELING CENTER

Mary Elizabeth Barker, Ph.D., *Director of the Testing and Counseling Center*

The Testing and Counseling Center, 718 Twenty-first Street NW., offers services which are available to students enrolled in the University, to high school students, and to adults of the community.

The services are designed to: assist individuals in the evaluation of their educational and vocational potentialities and objectives; diagnose academic difficulties; provide educational and vocational literature and information; and refer individuals to qualified agencies for assistance with problems not handled by the Center.

Fees.—Except for specialized testing, the fee covers testing and counseling based on the results of the tests. For students currently enrolled in the University, the fee is $7.50; for former students and community clients under twenty-one years of age, $30; for community clients over twenty-one, $45. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Center.

COURSES OF INSTRUCTION

COURSES OF INSTRUCTION

On the following pages of this CATALOGUE, under the alphabetically arrange names of the departments of instruction, are listed the courses of instruction offered by the University in the summer of 1958 and in the academic year 1958–59. The courses as here listed are subject to some slight change. The University reserves the right to withdraw any course announced.

HOURS OF INSTRUCTION

Courses of instruction are scheduled in the morning, afternoon, and evening. Evening classes are identical with daytime sections of corresponding courses, are taught by the same instructors, and carry the same amount of credit. By taking the evening and summer classes and extending the time of study beyond the customary four years, a student who is able to give only part of his time to college work may complete a regular curriculum and obtain a degree.

EXPLANATION OF COURSE NUMBERS

In the departments of the School of Medicine, first-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and fourth-year courses, from 401 to 500. This includes courses open to both medical and nonmedical students. Courses limited to nonmedical students follow the numbering system used in "all other schools and colleges" (see below).

In the Law School, first-year courses are numbered from 100 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and graduate courses, from 401 to 500.

In all other schools and colleges the following system of numbering is used:

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the officer of instruction, and when the completion of additional work has been certified by the officer of instruction.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily for graduate students. They are open, with the approval of the officer of instruction, to qualified seniors; they are not open to Junior College students or other undergraduates.

INDICATION OF THE AMOUNT OF CREDIT

The number of semester hours of credit given for the satisfactory completion of a course is, in most cases, indicated in parentheses after the name of the course. Thus, a year course giving 3 hours of credit each semester is marked (3–3), and a semester course giving 3 hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

ACCOUNTING

Ralph Dale Kennedy, Ph.D., *Professor of Accounting, Executive Officer*
Orton Wells Boyd, A.M., C.P.A., *Professorial Lecturer in Accounting*
Edwin Lewis, M.B.A., *Professorial Lecturer in Accounting*
Forest Carlyle Brimacombe, M.B.A., *Professorial Lecturer in Accounting*
Ira Ernest Steele, A.M., *Professorial Lecturer in Accounting*
James Leonard Buckler, A.M., *Professorial Lecturer in Accounting*
Fernand Vincent Demaret, M.S., *Professorial Lecturer in Accounting*
Frank Higginbotham, M.S., C.P.A., *Professorial Lecturer in Accounting*
Harold Jerome Bobys, A.B., C.P.A., *Professorial Lecturer in Accounting*
Frederick Charles Kurtz, M.B.A., C.P.A., *Associate Professor of Accounting*
Wilbur Earle Benson, M.B.A., *Assistant Professor of Accounting*
Earl Elton Pontius, Jr., M.S., *Assistant Professor of Accounting*

Associate in Arts (Junior College—Two-year vocational curriculum in Accounting).—For curriculum, see page 73.

Bachelor of Arts and *Master of Arts in Government with a major in Accounting (School of Government).*—See pages 66–67, 72; and 187–88, 191–92.

First Group

1–2 *Introductory Accounting* (3–3) The Staff

First half: fall—morning and evening; spring—morning and evening; summer 1958. *Second half:* fall—morning and evening; spring—morning and evening; summer 1958.

Basic principles and procedures underlying accounting records used by single proprietorships, partnerships, and corporations; preparation of the work sheet and financial statements; introduction to cost accounting, analysis of financial statements, and valuation and income determination problems. Prerequisites to Accounting 2: Accounting 1 or permission of the instructor.

3 *General Accounting* (3)

Not offered 1958–59.

Study of accounting systems used by single proprietorships and corporations, with emphasis on accounting theory, terminology, and the analysis and interpreation of accounting data. Designed for those who need only a survey of accounting.

SECOND GROUP

101 *Cost Accounting* (3) Kurtz, Pontius

Fall—morning and evening; summer 1958.

Theory and purposes of industrial cost accounting; treatment of systems of cost control and determination; analysis and interpretation of cost data. Prerequisite: Accounting 1–2.

102 *Advanced Cost Accounting* (3) Pontius

Spring—evening.

Advanced cost accounting theory and problems with emphasis on development and analysis of standard costs, the use of cost data for managerial control, and distribution cost accounting. Prerequisite: Accounting 101 or permission of the instructor.

111 *Financial Statement Analysis* (3) Kennedy, Steele

Fall—morning; spring—evening; summer 1958.

Methods and techniques of preparing, analyzing, and interpreting financial statements for the guidance of operating executives, directors, stockholders, and creditors; influence of price level changes on accounting data; determination and interpretation of trends and ratios. Prerequisite: Accounting 1–2 or permission of the instructor.

121–22 *Intermediate Accounting* (3–3) Benson, Higginbotham

Academic year—morning and evening.

Valuation and income determination problems; treatment of depreciation, funds, and reserves; accounting for the organization, financing, operation, and dissolution of partnerships and corporations. Prerequisite: Accounting 1–2. Prerequisite to 122: Accounting 121.

132 *Accounting Theory* (3) Kennedy

Spring—morning.

Development of basic accounting principles and concepts with special reference to current thought expressed by the American Institute of Certified Public Accountants and the American Accounting Association. Prerequisite: 6 hours of accounting.

141 *Governmental Accounting* (3) Lewis

Fall—evening.

Problems relating to governmental appropriation accounts, encumbrances, and fund accounting. Emphasis on municipal and state government accounting with an introduction to federal accounting. Prerequisite: Accounting 1–2 or permission of the instructor.

142 *Federal Accounting* (3) Lewis

Spring—evening.

Accounting problems and reports of the Federal Government. Prerequisite: Accounting 141 or permission of the instructor.

161 *Income Tax Accounting* (3) Kurtz, Boyd

Fall—morning and evening.

Problems involved in the federal income taxation of individuals and corporations; differences between tax accounting and financial accounting; social security taxes. Prerequisite: Accounting 1–2.

162 *Federal Tax Practice* (3) Kurtz, Boyd

Spring—morning and evening.

Advanced problems of federal tax practice such as the tax treatment of partnerships, estates, trusts, corporate reorganizations, foreign income, gifts. Use of the tax services. Assessment, collection, and refund procedures. Prerequisite: Accounting 161 or the permission of of the instructor.

171 *Auditing* (3) Kurtz, ————

Fall—evening; spring—morning; summer 1958.

Duties and responsibilities of auditors; principles and procedures of making audits; techniques of verifying each financial statement item; preparation of audit working papers and reports. Prerequisite: Accounting 121–22.

172 *Auditing Practice* (3) ————

Spring—evening.

Preparation of audit reports, accounting statements to be filed with Securities and Exchange Commission, current developments of auditing standards and practice. Prerequisite: Accounting 171 or permission of the instructor.

181 *Accounting Systems* (3) Lewis

Fall—evening.

Theory and procedure of designing and installing accounting systems for collecting, recording, analyzing, and presenting accounting data. Prerequisite: Accounting 101, 121–122, and 171, or permission of the instructor.

191 *Advanced Accounting* (3) Bobys

Fall—evening; summer 1958.

Consolidated statements, statement of affairs, realization and liquidation reports, and estate and trust accounting. Prerequisite: Accounting 121–22.

193 *Business Budgeting* (3) ————, Brimacombe

Fall—morning; spring—evening; summer 1958.

Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial and industrial organizations. Prerequisite: Accounting 1–2.

194 *Business Budgeting: Practice and Problems* (3)

Not offered 1958–59.

Practical application of budget principles and techniques; advanced problems involved in general budgetary administration for management control purposes in commercial and industrial business. Prerequisite: Accounting 193 or permission of the instructor.

Lewis

198 *Professional Accounting Review* (3)

Spring—evening.

Review and coordination of the principles and techniques developed in the accounting curriculum, in preparation both for general practice in the field of accountancy and for professional accounting examinations. Prerequisite: Accounting 101, 141, 162, 171, and 191, or permission of the instructor.

THIRD GROUP

211–12 *Managerial Accounting* (3–3)

Not offered 1958–59.

First half: analysis of the accounting system with special reference to the use of financial and operating records and accounting reports as tools of management; a study of valuation and income determination problems including the influence of price level changes on accounting data. Prerequisite: Accounting 1–2 or 3. *Second half:* a survey of internal accounting controls, commercial budgets, and cost accounting systems used by management in directing and controlling a business. Prerequisite to Accounting 212: Accounting 211 or permission of the instructor.

Kennedy

231 *Contemporary Accounting Theory* (3)

Summer 1958.

Advanced accounting principles and concepts and recent theories concerned with the valuation of assets and determination of income. Admission by permission of the instructor.

246 *Governmental Accounting and Budgeting Problems* (3)

Not offered 1958–59.

Advanced principles and practices in federal accounting relationship to general policy and administration. Prerequisite: Accounting 142 and 152, or permission of the instructor.

275 *Internal Control and Auditing* (3)

Not offered 1958–59.

Internal accounting controls; review and appraisal of accounting systems and procedures; managerial policies with respect to their effectiveness and profitableness. Emphasis on the use of internal control and auditing as an aid to management. Prerequisite: Accounting 171 or permission of the instructor.

295–96 *Seminar in Accounting* (3–3) Kennedy

Academic year—evening.

Selected accounting research topics and problems; individual oral and written reports. Admission by permission of the instructor.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1958.

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following accounting courses for students enrolled in the following special programs: Navy Graduate Comptrollership Program, Air Force Advanced Management Program, and Engineering Administration.

3 *General Accounting* (3)

204 *Survey of Cost Accounting* (2)

211–12 *Managerial Accounting* (3–3)

275 *Survey of Internal Control and Auditing* (2)

293 *Budget Preparation and Control* (3)

AIR SCIENCE

Carl Swyter, B.S. in E.E., Colonel, United States Air Force, *Professor of Air Science, Executive Officer*

Robert Henry Mucha, M.B.A., Major, United States Air Force, *Assistant Professor of Air Science*

Thomas Gudgel Martin, A.B., Captain, United States Air Force, *Assistant Professor of Air Science*

William Wightman Richardson III, A.B., First Lieutenant, United States Air Force, *Assistant Professor of Air Science*

Virginia Bernhisel, B.S., First Lieutenant, United States Air Force, *Assistant Professor of Air Science*

James John Quarto, Master Sergeant, United States Air Force, *Instructor in Air Science*

Harold Frakes, Master Sergeant, United States Air Force, *Instructor in Air Science*

Gerald Cleveland Purcell, Technical Sergeant, United States Air Force, *Instructor in Air Science*

Leonard Edward LaBrecque, Jr., Staff Sergeant, United States Air Force, *Instructor in Air Science*

Training Certificate.—This certificate is awarded upon satisfactory completion of the basic Air Force ROTC course of instruction.

Commission in the United States Air Force Reserve.—Upon being awarded a Bachelor's degree and upon the satisfactory completion of the Air Force ROTC course of instruction prescribed by law and regulations, the graduate will be appointed Second Lieutenant, United States Air Force Reserve.

Basic Course

1–2 *Leadership Laboratory—Freshman Year* (1–1) The Staff

Academic year—afternoon.

Cadet basic airman training. Military courtesy, discipline, appearance, and bearing; element, flight, squadron, and mass formation drill; parades and ceremonies. Minimum 15 hours a semester. Dry-cleaning fee, charged one time a year, $3. (May be substituted for Physical Education 1–2.)

11–12 *Leadership Laboratory—Sophomore Year* (1–1) The Staff

Academic year—afternoon.

Cadet noncommissioned officer training. Military bearing and courtesy, all phases of drills and ceremonies, command voice training and command responsibility. Prerequisite: Air Science 1–2 and Air Science

21–22 for men and Air Science 1–2 for women. Minimum 15 hours a semester. Dry-cleaning fee, charged one time a year, $3. (May be substituted for Physical Education 11–12.)

21–22 *Air Science I—Freshman Year* (2–2) Richardson

Academic year: 2 hours a week—morning and afternoon.

Foundation of air power. A general survey of air power designed to provide the student with an understanding of the elements of air power and basic aeronautical science.

51–52 *Air Science II—Sophomore Year* (2–2) Martin

Academic year: 2 hours a week—morning and afternoon.

Careers in the United States Air Force; elements of aerial warfare, targets, weapons, aircraft, bases, and operations. Prerequisite: Air Science 21–22 or equivalent active military training.

ADVANCED COURSE

101–2 *Air Science III—Junior Year* (3–3) Mucha

Academic year: 4 hours a week—morning.

The Air force Commander and his Staff, creative problem solving, communicating in the Air Force, instructing in the Air Force, military justice, air navigation, weather, Air Force base functions. Selection by a board of University and Air Force officials is required.

103–4 *Leadership Laboratory—Junior Year* The Staff
(Credit is a part of Air Science 101–2)

Academic year—afternoon.

Cadet noncommissioned officer and officer training. Wearing of the uniform, parades and ceremonies, commands and command voice. Cadets perform duties involving planning for and supervision of Cadet Corp activities. Emphasis placed on leadership and management proficiency. Minimum 15 hours a semester.

105 *Summer Training Unit—Between Junior and Senior Years* (required) The Staff

Attendance at a four-week Air Force ROTC summer training unit at an Air Force base within continental United States is mandatory. Program consists of familiarization flying, physical training, individual weapons, Air Force base activity and equipment, field exercises, air base problems, and leadership training.

151–52 *Air Science IV—Senior Year* (3–3) Mucha

Academic year: 4 hours a week—morning.

Leadership and management seminar; military aviation and the evolution of warfare; military aspects of world political geography; briefing for commissioned service.

153–54 *Leadership Laboratory—Senior Year* The Staff
(Credit is a part of Air Science 151–52)

Academic year—afternoon.

Cadet officer training. Cadet officers conduct activities of Corps of Cadets through chain of command, instruct subordinates, plan and supervise Cadet Corps training and administration. Preparation for commissioned officer duties. Development of leadership and managerial responsibilities. Minimum 15 hours per semester.

ANATOMY

Ira Rockwood Telford, Ph.D., *Professor of Anatomy, Executive Officer*
Paul Calabrisi, Ph.D., *Professor of Anatomy*
Larus Einarson, M.D., *Visiting Research Professor of Anatomy*
Gerald Fred Hungerford, Ph.D., *Associate Professor of Anatomy*
Frank Duane Allan, Ph.D., *Assistant Professor of Anatomy*
Thomas Nick Johnson, Ph.D., *Assistant Professor of Anatomy*
Wilfred Walter Eastman, B.S., M.D., *Clinical Instructor in Anatomy*
Lloyd Eugene Church, D.D.S., M.S., *Clinical Instructor in Anatomy*
Raymond Nathan Brown, M.D., *Clinical Instructor in Anatomy*
Lysle Westley Williams, A.B., M.D., *Clinical Instructor in Anatomy*

SPECIAL LECTURERS

Webb Edward Haymaker, M.D., M.S., *Chief, Neuropathology Section, Armed Forces Institute of Pathology;* Neuroanatomy
Joseph Vitold Michalski, Ph.D., *Anatomist, Armed Forces Institute of Pathology;* Anatomy

Master of Science in the field of Anatomy (Columbian College).—Prerequisite: a Bachelor of Arts or Bachelor of Science degree from this University, or the equivalent, with a major in Biology, Chemistry, or Zoology. The undergraduate program must include the following courses, or the equivalent: Chemistry 11–12, 21, 151–52; Physics 6, 7; Zoology 1–2, 41–42. Biochemistry 221–22 is recommended as an elective.

Required: the general requirements of Columbian College as stated on pages 89–92. The thirty semester hours of graduate work must include Anatomy 203, 204, 205, 221–22, 295–96, 299–300, and graduate courses in biochemistry, physiology, or related fields selected with the approval of the Department. It is not always possible to arrange courses and research so that the student can be assured of completing all the required work in one academic year.

Doctor of Philosophy (Graduate Council).—See page 96.

101–2 *Gross Anatomy* — Calabrisi and Staff

Academic year: fall—12 hours a week; spring—8½ hours a week.

Regional dissection of the human body, supplemented with lectures and quiz sections. Study of X-ray anatomy to emphasize the functional aspects of the position, shape, and relation of the viscera and skeletal components.

103 *Human Embryology* — Allan and Staff

Fall—3 hours a week.

The origin and development of the human body. Special emphasis on the value of embryology in interpreting anatomical anomalies and variations as seen in gross dissection, surgery, obstetrics, and pathology.

104 *Neuroanatomy* Johnson and Staff

Spring—5½ hours a week.

The macroscopic and microscopic study of the central nervous system and the special sense organs. Emphasis on such dynamic aspects as development, pathways, lesions, etc.

105 *Microscopic Anatomy* Telford, Hungerford, and Staff

Fall—9 hours a week.

Study of the detailed minute structure of cells, tissues, and organs of the human body, with emphasis on the relation of structure to function. Recognition and interpretation of histological sections tested by practical examinations.

106 *Living Anatomy* The Staff

Spring—1 hour a week.

An introduction to physical diagnosis, with special emphasis on topographical anatomy.

201–2 *Gross Anatomy* (6–4) Calabrisi and Staff

Academic year—as arranged.

For qualified nonmedical graduate students. Same as Anatomy 101–2. Anatomy 201—laboratory fee, $21; Anatomy 202—laboratory fee, $16.

203 *Human Embryology* (2) Allan and Staff

Fall—as arranged.

For qualified nonmedical graduate students. Same as Anatomy 103. Laboratory fee, $8.

204 *Neuroanatomy* (3) Johnson and Staff

Spring—as arranged.

For qualified nonmedical graduate students. Same as Anatomy 104. Laboratory fee, $13.

205 *Microscopic Anatomy* (4) Telford, Hungerford, and Staff

Fall—as arranged.

For qualified nonmedical graduate students. Same as Anatomy 105. Laboratory fee, $13.

221–22 *Seminar* (1–1) Allan and Staff

Academic year: 1 hour a week—as arranged.

Research or reports and discussions of special topics by the Staff and graduate students. For graduate students. Medical students are encouraged to attend.

295–96 *Research* (arr.) The Staff

Academic year—as arranged.

Fees to be arranged.

299–300 *Thesis* (3–3) The Staff

ANESTHESIOLOGY

Charles Seymour Coakley, M.D., *Professor of Anesthesiology, Executive Officer*

Donald Harrison Stubbs, A.M., M.D., *Clinical Professor of Anesthesiology*

Seymour Alpert, A.B., M.D., *Associate Professor of Anesthesiology*

Cunningham Ramsey MacCordy, M.D., *Assistant Professor of Anesthesiology*

Solomon Naphtali Albert, A.B., M.D., *Assistant Clinical Professor of Anesthesiology*

Paula Reines Kaiser, M.B., Ch.B., M.D., *Associate in Anesthesiology*

Ruth Auguste Vankai, M.D., *Instructor in Anesthesiology*

William Eldridge Bageant, M.D., *Clinical Instructor in Anesthesiology*

Allen Widome, M.D., *Clinical Instructor in Anesthesiology*

Charles Gruenwald, A.B., M.D., *Clinical Instructor in Anesthesiology*

320 *Anesthesiology* The Staff

Spring—1 hour a week.

The fundamentals of anesthesia are reviewed and correlated with other medical specialties.

421–22 *Anesthesia Seminar* The Staff

Academic year—1 hour a week.

Students attend anesthesia seminars during their surgical clinical clerkships. University Hospital.

433–34 *Advanced Anesthesiology* The Staff

Academic year—as arranged.

Students are rotated through the work of the department for a period of two weeks and assigned to work in the operating rooms and to attend conferences and seminars. For the more advanced students a three-week elective is offered.

104 *Neuroanatomy* Johnson and Staff

Spring—5½ hours a week.

The macroscopic and microscopic study of the central nervous system and the special sense organs. Emphasis on such dynamic aspects as development, pathways, lesions, etc.

105 *Microscopic Anatomy* Telford, Hungerford, and Staff

Fall—9 hours a week.

Study of the detailed minute structure of cells, tissues, and organs of the human body, with emphasis on the relation of structure to function. Recognition and interpretation of histological sections tested by practical examinations.

106 *Living Anatomy* The Staff

Spring—1 hour a week.

An introduction to physical diagnosis, with special emphasis on topographical anatomy.

201–2 *Gross Anatomy* (6–4) Calabrisi and Staff

Academic year—as arranged.

For qualified nonmedical graduate students. Same as Anatomy 101–2. Anatomy 201—laboratory fee, $21; Anatomy 202—laboratory fee, $16.

203 *Human Embryology* (2) Allan and Staff

Fall—as arranged.

For qualified nonmedical graduate students. Same as Anatomy 103. Laboratory fee, $8.

204 *Neuroanatomy* (3) Johnson and Staff

Spring—as arranged.

For qualified nonmedical graduate students. Same as Anatomy 104. Laboratory fee, $13.

205 *Microscopic Anatomy* (4) Telford, Hungerford, and Staff

Fall—as arranged.

For qualified nonmedical graduate students. Same as Anatomy 105. Laboratory fee, $13.

221–22 *Seminar* (1–1) Allan and Staff

Academic year: 1 hour a week—as arranged.

Research or reports and discussions of special topics by the Staff and graduate students. For graduate students. Medical students are encouraged to attend.

295–96 *Research* (arr.) The Staff

Academic year—as arranged.

Fees to be arranged.

299–300 *Thesis* (3–3) The Staff

ANESTHESIOLOGY

Charles Seymour Coakley, M.D., *Professor of Anesthesiology, Executive Officer*

Donald Harrison Stubbs, A.M., M.D., *Clinical Professor of Anesthesiology*

Seymour Alpert, A.B., M.D., *Associate Professor of Anesthesiology*

Cunningham Ramsey MacCordy, M.D., *Assistant Professor of Anesthesiology*

Solomon Naphtali Albert, A.B., M.D., *Assistant Clinical Professor of Anesthesiology*

Paula Reines Kaiser, M.B., Ch.B., M.D., *Associate in Anesthesiology*

Ruth Auguste Vankai, M.D., *Instructor in Anesthesiology*

William Eldridge Bageant, M.D., *Clinical Instructor in Anesthesiology*

Allen Widome, M.D., *Clinical Instructor in Anesthesiology*

Charles Gruenwald, A.B., M.D., *Clinical Instructor in Anesthesiology*

320 *Anesthesiology* The Staff

Spring—1 hour a week.

The fundamentals of anesthesia are reviewed and correlated with other medical specialties.

421–22 *Anesthesia Seminar* The Staff

Academic year—1 hour a week.

Students attend anesthesia seminars during their surgical clinical clerkships. University Hospital.

433–34 *Advanced Anesthesiology* The Staff

Academic year—as arranged.

Students are rotated through the work of the department for a period of two weeks and assigned to work in the operating rooms and to attend conferences and seminars. For the more advanced students a three-week elective is offered.

ART

Donald Chenoweth Kline, B.Arch., M.F.A., *Professor of Art, Executive Officer*
Grose Evans, B.F.A., Ph.D., *Professorial Lecturer in Art*
Laurence Pereira Leite, A.M., *Assistant Professor of Art*

STAFF IN THE CORCORAN SCHOOL OF ART

DRAWING AND PAINTING: Richard Lahey, Principal; Edmund Archer, Jessalee Sickman, John Lewis, William Walton
SCULPTURE AND CARVING: Heinz Warneke
COMMERCIAL ART: Edward Forrest Walton

Bachelor of Arts with majors in (1) *Art History and Theory,* (2) *Drawing and painting,* (3) *Sculpture,* and (4) *Commercial Art (Columbian College—Departmental):*

The major in Art History and Theory:—Prerequisite: the Arts and Letters curriculum in the Junior College, or the equivalent, including Art 31–32 and six hours selected from the following: 65–66, 75–76, 71–72.

Required: in addition to the general requirements stated on pages 82–88, twenty-four semester hours in Art, which must include Art 101, 102, 105, 106, 109, 110, 161–62; twelve hours selected from Art 107, 108, 141, 142, 143, 146.

The majors in Drawing and Painting, Sculpture, and Commercial Art.—Prerequisite: the Arts and Letters curriculum in the Junior College, or the equivalent, including Art 31–32 and six additional hours selected from first-group art courses.

Required: in addition to the general requirements stated on pages 82–88, twenty-four hours of drawing and painting, sculpture, or commercial art; and twelve hours of art history selected from 101, 102, 105, 106, 108, 109, 110, 143, 146, 161–62. Classes in drawing and painting, sculpture, and commercial art are held at the Corcoran School of Art.

Bachelor of Art in Education with a teaching field in Art (School of Education).—Prerequisite: the Education curriculum, page 70.

Required: the Art option, pages 163–64 and professional courses on page 171.

ART HISTORY AND THEORY

FIRST GROUP

Leite

1 *Art Appreciation* (3)

Fall—morning; spring—morning; summer 1958 (as Art 11).

A consideration of the vocabulary, methods, and materials of creative expression in the fine arts. A study of the language and function of art in its various media, the development of styles, aesthetic principles, theories, and ideals in art through the ages. (Not intended for the prospective art major.)

Leite

31–32 *Survey of Art* (3–3)

Academic year—evening.

A survey of the arts from primitive beginnings to modern times.

71–72 *Introduction to the Arts in America* (3–3) Kline

Academic year—morning and evening; summer 1958.

Painting, sculpture, architecture, furniture, and the popular arts from the colonial beginnings to the present.

SECOND GROUP

101 *Ancient Art* (3) Kline

Fall—morning.

The development of the forms of architecture, sculpture, painting, and the minor art in the Ancient civilizations of Egypt, Mesopotamia, Greece, and Rome.

102 *Medieval Art* (3) Kline

Spring—morning.

A study of the architecture, sculpture, and painting from the formative stages of Christian Art in the Byzantine Age through the Romanesque and Gothic periods.

105 *Renaissance Art in Italy* (3) Leite

Fall—morning; summer 1958.

The development of painting, sculpture, and architecture in 15th and 16th century Italy.

106 *Renaissance Art in the North* (3) Leite

Spring—afternoon.

A study of the painting, graphic arts, and major architectural developments in England, France, the Netherlands, Germany, and Spain, during the 16th, 17th, and 18th centuries.

107 *Christian Art and Iconography* (3) Leite

1959–60 and alternate years.

The origins and development of Christian symbols and themes from Early Christian to modern times.

108 *Baroque Art in Italy* (3) Leite

1959–60 and alternate years.

The development of painting, sculpture, and architecture in the 16th and 17th centuries in Italy.

109 *Nineteenth Century Art in Europe* (3) Leite

Fall—afternoon.

The development of European painting and sculpture from Neoclassicism and Romanticism through Impressionism.

110 *Contemporary Art* (3) Leite

Spring—afternoon.

A study of sculpture and painting from Post Impressionism through the later modern movements to the present.

141 *Interior Decoration* (3) Kline

1958–59 and alternate years: fall—afternoon.

A study of the principles of decoration dealing with furniture design and ensemble layout, draperies, color, accessories, and lighting.

142 *House Planning* (3) Kline

1958–59 and alternate years: spring—afternoon.

Study of the contemporary house for family living, including site problems, the case plan, materials of building, and climate conditioning.

143 *Primitive Art* (3) Kline

1959–60 and alternate years.

The arts of prehistoric and primitive man in the pre-Columbian Americas, Oceania, and Africa.

146 *Art of the Far East* (3) Kline

1959–60 and alternate years.

The architecture, painting, and sculpture of China and Japan.

161–62 *Theory and Criticism* (3–3) Evans

Academic year—evening.

The artist on art and the history of art criticism.

DRAWING AND PAINTING, SCULPTURE, AND COMMERCIAL ART

First Group

45–46 *Drawing and Painting I—Life and Still Life* (6–6) Sickman

Academic year—morning and afternoon.

55–56 *Drawing and Painting I—Life and Portrait* (6–6) Lewis

Academic year—afternoon.

65–66 *Drawing and Painting I—Life, Still Life, and Portrait* (3–3) The Staff

Academic year—morning and afternoon.

67–68 *Drawing and Painting I—Life and Portrait* (6–6) Archer

Academic year—morning, afternoon, and evening.

75–76 *Drawing and Painting I—Life, Still Life, and Portrait* (3–3) W. Walton

Academic year—evening.

81–82 *Sculpture I* (6–6) Warneke

Academic year—afternoon and evening.
Modeling and composition in clay.

83–84 *Fundamentals of Commercial Art* (3–3) E. Walton

Academic year—afternoon.

Introduction to the techniques and media of commercial art.

SECOND GROUP

125–26 *Drawing and Painting II—Life, Still Life, and Portrait* (6–6) Sickman

Academic year—morning and afternoon.

127–28 *Drawing and Painting II—Life and Portrait* (6–6) Archer

Academic year—morning, afternoon, and evening.

165–66 *Drawing and Painting II—Life and Portrait* (6–6) Lahey, Lewis

Academic year—morning, afternoon, and evening.

179–80 *Sculpture II* (6–6) Warneke

Academic year—afternoon and evening.
Portrait-life modeling and composition in clay, plaster and wood carving.

181–82 *Design and Commercial Art* (3–3) The Staff

Academic year—afternoon.

183–84 *Commercial Art* (6–6) E. Walton

Academic year—afternoon and evening.
Perspective drawing; scaling; drawing of furniture, merchandise, and fashion; lettering and typography; layout; rendering techniques; production methods.

185–86 *Advanced Commercial Art* (6–6) E. Walton

Academic year—afternoon and evening.
Layout and illustrative projects in advertising campaigns; reproduction methods in black and white, half-tone mediums, and color; work portfolios.

BACTERIOLOGY, HYGIENE, AND PREVENTIVE MEDICINE

Leland Wilbur Parr, Ph.D., *Professor Emeritus of Bacteriology in Residence*

Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*

Herbert Leonard Ley, Jr., M.D., M.P.H., *Professor of Bacteriology, Executive Officer*

Ralph Gregory Beachley, M.D., Dr.P.H., *Adjunct Professor of Public Health Practice*

Mary Louise Robbins, Ph.D., *Associate Professor of Bacteriology*

William Gray McCarten, M.S., *Assistant Professor of Bacteriology*

Rudolph Hugh, Ph.D., *Assistant Professor of Bacteriology*

Charles Francis McCaffrey, M.D., *Clinical Instructor in Preventive Medicine and Public Health*

William Donald Hann, M.S., *Associate in Bacteriology*

SPECIAL LECTURERS

Chester Wilson Emmons, Ph.D., *Chief, Medical Mycology Unit, Laboratory of Infectious Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health;* Medical Mycology

Willard Hull Wright, D.V.M., Ph.D., *Chief, Laboratory of Tropical Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health;* Medical Zoology

John Roderick Heller, Jr., B.S., M.D., *Director, National Cancer Institute, National Institutes of Health;* Cancer Control

Robert Carter Cook, *Director, Population Reference Bureau; Editor, Journal of Heredity;* Medical Genetics

Robert Hanna Felix, M.D., M.P.H., *Director, National Institute of Mental Health, National Institutes of Health;* Mental Hygiene

Francis Byron Gordon, Ph.D., M.D., *Head, Virology Division, National Naval Medical Research Institute, National Naval Medical Center;* Virology

Samuel Jacob Ajl, Ph.D., *Assistant Chief, Department of Bacteriology, Communicable Diseases Division, Walter Reed Army Institute of Research, Walter Reed Army Medical Center;* Microbiological Chemistry

Sarah Bishop Brooks, R.N., B.S. in P.H.N., *Director, Division of Public Health Nursing, Arlington County Health Department;* Public Health Practice

Martin Marc Cummings, B.S., M.D., *Chief, Research and Education Service, Department of Medicine and Surgery, Veterans Administration;* Medical Bacteriology

Morris Cecil Leikind, M.S., *Chief, Historical Research Division, Medical Museum, Armed Forces Institute of Pathology;* History of Microbiology

James Lee Goddard, M.D., M.P.H., *Chief, Accident Prevention Program, Division of Special Health Services, Department of Health, Education, and Welfare;* Accident Prevention

Master of Arts or *Master of Science in the field of Bacteriology (Columbian College).*—Prerequisite: a Bachelor of Arts or a Bachelor of Science degree, respectively, from this University, or the equivalent, with a major in Biology, Botany, Chemistry, or Zoology. The undergraduate program must include the following courses or the equivalent: Chemistry 11–12, 21, 151–52; Physics 6, 7; Zoology 1–2, 41–42.

Required: the general requirements of Columbian College as stated on pages 89–92. The thirty semester hours must include Bacteriology 209, 210, 293–94, 295–96, 299–300. The remaining courses are to be selected from Bacteriology 219–20, 230, 232, 234, 240 and Biochemistry 221–22 (if not presented for admission). The student with much bacteriological background may substitute for credit one course from the following: cytology, genetics, cell physiology, entomology, histology, biostatistics, and protozoa. It is not always possible to arrange courses and research so that the student can be assured of completing all required work in one academic year.

Doctor of Philosophy (Graduate Council).—See page 96.

101 *Biostatistics* (1) Griffin

Fall—Sat., 11:00 A.M.

The meaning and use of statistical terms and methods pertinent to the design of experiments and the interpretation of the results obtained in laboratory, clinical, and field trials.

112 *General Bacteriology* (4) Hugh

Spring—Mon., Wed., and Fri., 9:10 to 12:00 A.M.

For nonmedical students. A study of the fundamentals of bacteriology, including hygienic applications. Methods of cultivation and control of several groups of microorganisms are studied in the laboratory. Prerequisite: any biological laboratory science; Chemistry 11–12. Laboratory fee, $13.

209 *Medical Microbiology* (1–11) Parr, Griffin

Fall: lecture (4 hours), laboratory (10 hours)—as arranged.

Bacteria, rickettsia, viruses, yeasts, molds, protozoa, and metazoa which relate to the health and diseases of man—cultural study of most important forms; methods of diagnosis by microscopic, cultural, immunologic, and animal reactions; theory and methods of immunology; vaccines; serums; antibiotics. Open to suitably prepared graduate students; may be elected as a whole or in part by adding the appropriate letter to the course number, with credit allocated as follows: (a) *Bacteriology*, including rickettsia and viruses—lecture (4), laboratory (3); (b) *Parasitology*, including medical mycology—lecture (2), laboratory (1); (c) *Immunology* (1). May be taken by a limited number of candidates for Master's degrees. Laboratory fee, $4.50 for each semester hour of laboratory work.

210 *Fundamentals of Epidemiology and Public Health* (2)

Parr and Staff

Spring—Mon., 2:00 to 4:00 P.M.

Sources, modes, and implications of infection and injury. Consideration also given the problems of accidents and industrial medicine. Open to liberal arts graduate students. Prerequisite: Bacteriology 112 or 209.

219–20 *Advanced Microbiology* (arr.)

Hugh and Staff

Academic year—as arranged.

Special study of advanced methods and current problems in microbiology for suitably qualified students specializing in microbiology. Prerequisite: Bacteriology 112 or 209; Chemistry 151–52 or the equivalent; permission of the instructor. Laboratory fee, $4.50 a semester hour.

230 *Statistics in Microbiology* (3)

Griffin

Spring—as arranged.

The application of statistical methods to the problems of microbiology. For graduate students. Prerequisite: entrance or elementary college algebra.

232 *Immunological Methods* (3)

McCarten

1958–59 and alternate years: spring—as arranged.

Preparation and testing of serological materials. Demonstration of basic serological phenomena. For graduate students. Prerequisite: Bacteriology 112 or 209 and permission of the instructor. Laboratory fee, $11.

234 *Virology* (6)

Robbins

Spring—as arranged.

Study of viruses and rickettsiae. Lectures and laboratory exercises. For graduate students. Prerequisite: Bacteriology 112 or 209 and permission of the instructor. Laboratory fee, $16.

240 *Advanced Epidemiology and Public Health* (3)

Parr

Spring—as arranged.

Conferences, readings, and problems for graduate students dealing with specialized and advanced phases of the topics presented in Bacteriology 210. Prerequisite: Bacteriology 210.

293–94 *Staff Seminar* (1–1) The Staff

Academic year—as arranged.

For graduate students. Bi-weekly throughout the year.

295–96 *Research in Bacteriology* (arr.) The Staff

Academic year—as arranged.

299–300 *Thesis* (3–3) The Staff

401 *Public Health Practice* Beachley and Staff

Fall—1 hour a week for 5 weeks.

Study of public health practice at national, state, city, and county levels. Public and private agencies.

BIOCHEMISTRY

Joseph Hyram Roe, Ph.D., *Professor of Biochemistry, Executive Officer*
Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
Bernard Leonard Horecker, Ph.D., *Professorial Lecturer on Enzymes*
William Robert Carroll, Ph.D., *Professorial Lecturer on Proteins*
Charles Huntt Fugitt, Ph.D., *Professorial Lecturer on Physical Biochemistry*
Benjamin Williams Smith, Ph.D., *Associate Professor of Biochemistry*
Archie Lee Smith, M.S., *Instructor in Biochemistry*
Harold William Clark, Jr., Ph.D., *Associate in Biochemistry*

Master of Arts or *Master of Science in the field of Biochemistry (Columbian College).*—Prerequisite: a Bachelor of Arts or a Bachelor of Science degree. The undergraduate program must have included the following courses, or the equivalent: Chemistry 11–12, 21, 22, 151–52; Physics 6 and 7; Zoology 1–2 or Biology 1–2.

Required: the general requirements of Columbian College as stated on pages 89–92. The thirty semester hours must include Biochemistry 221–22, 225–26, 227–28, 299–300. The remaining courses are to be selected from Biochemistry 224, 232, 234, 242, 251, 261, 295–96, or, with the approval of the adviser, from graduate courses in Bacteriology, Chemistry, Physiology, or Pharmacology. It is usually not possible to arrange courses and research so that the student can be assured of completing all of the required work in one academic year.

Doctor of Philosophy (Graduate Council).—See page 97.

113–14 *Biochemistry* Roe and Staff

Academic year: lecture (2 hours), conference (1 hour), laboratory (6 hours)—as arranged.

Physiological and clinical chemistry. For medical students.

221–22 *Biochemistry* (4–4) Treadwell

Academic year—Tues. and Thurs., 9:00 to 12:00 A.M. and 1:00 to 2:00 P.M.

A lecture and laboratory course for nonmedical students. Prerequisite: Chemistry 22 and 152. Material fee, $15 a semester.

224 *Biochemistry of the Enzymes* (1) Horecker

Spring—Mon., 5:00 P.M.

Lecture course dealing with the biochemistry of the enzymes and enzyme reactions. Prerequisite: Biochemistry 113 or 221.

225–26 *Biochemical Procedures* (3–3) B. Smith and Staff

Academic year—as arranged.

A laboratory course. Material fee, $16 a semester.

227–28 *Biochemistry Seminar* (1–1) Roe

Academic year—Fri., 4:00 P.M.

The current literature in the field of biochemistry, mainly for graduate students, but open to a limited number of specially qualified medical students.

232 *Proteins and Amino Acids* (1) Carroll

Spring—Wed., 5:00 P.M.

A lecture course. Prerequisite: Biochemistry 113 or 221.

234 *Physical Biochemistry* (1) Fugitt

Spring—Sat., 9:00 A.M.

A lecture course. Physical methods as applied to biochemical problems, including macromolecules and radiobiology. Prerequisite: Biochemistry 113 or 221.

251 *Carbohydrate Metabolism* (1) Roe

1958–59 and alternate years: Fall—Sat., 9:00 A.M.

A lecture course. Prerequisite: Biochemistry 114 or 222.

261 *Biochemistry of the Lipids* (1) Treadwell

1959–60 and alternate years.

A lecture course. Prerequisite: Biochemistry 114 or 222.

295–96 *Research in Biochemistry* (arr.) Roe, Treadwell

Academic year—as arranged.

299–300 *Thesis* (3–3) Roe, Treadwell

BIOLOGY*

Paul William Bowman, Ph.D., *Professor of Biology, Executive Officer*
Robert Carter Cook, *Professorial Lecturer on Genetics*
Sam Clark Munson, Ph.D., *Associate Professor of Biology*

Bachelor or Arts or *Bachelor of Science with a major in Biology (Columbian College—Field-of-Study).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 68 and 69.

Required: the general requirements of Columbian College as stated on pages 82–88 and the grade of "pass" on the Biology major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the classification and life histories of plants and animals, ecology, geology, evolution, heredity, the physical and cultural development of man, public health problems, and the history of biology. The course offerings will be correlated and supplemented by supervised study in a proseminar. For further details, see the pamphlet, which is available at the Office of the Dean of Columbian College.

Master of Arts or *Master of Science in the field of Biology (Columbian College).*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Biology at this University, or the equivalent.

Required: the general requirements of Columbian College as stated on pages 89–92.

Bachelor of Arts in Education with a teaching field in Biology (School of Education).—Prerequisite: the Education curriculum, page 70.

Required: the Biology option, page 164, and the professional courses listed on page 171.

Doctor of Philosophy (Graduate Council).—See page 97.

FIRST GROUP

Munson and Staff

1–2 *Survey in Biology* (3–3)

Academic year—morning, afternoon, and evening; summer 1958.

Systematic study of the plant and animal kingdoms, with emphasis upon the interdependence of living things and their relations with their environments. Introduction to evolution, heredity, public health, and conservation. Material fee, $7 a semester. Lecture, laboratory, and field trip to nearby countryside, museums, and other places of biological interest.

SECOND GROUP

Bowman

107–8 *Organic Evolution* (3–3)

1958–59 and alternate years: academic year—morning; 1959–60 and alternate years: academic year—evening.

A study of the theories of organic evolution and present ideas on the principal lines of development in the plant and animal kingdoms;

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* See also departments of Botany and Zoology.

a review of the contributions to an understanding of the mechanisms involved in this process from the fields of genetics and cytology. Prerequisite: one year of college work in biology, botany, or zoology.

115–16 *Cytology* (3–3) Bowman

Lecture and laboratory. 1958–59 and alternate years: academic year—evening; 1959–60 and alternate years: academic year—afternoon.

Plant and animal cells and their components, including the chromosomes and their role in heredity, with training in the preparation of materials for study. Prerequisite: one year of college work in biology, botany, or zoology. Material fee, $8 a semester.

127 *Genetics* (3) Cook

Academic year—evening.

A lecture course in which the general principles are illustrated with specific examples of inheritance in plants and animals, including man. Prerequisite: one year of college work in biology, botany, or zoology.

139 *Cell Physiology* (3)

Not offered 1958–59.

The fundamental physiology of protoplasm. Prerequisite: Chemistry 12 and one year of college biology, botany, or zoology.

199–200 *Proseminar in Biology* (3–3) Munson

Academic year—morning.

Individually planned and directed study by means of which majors in biology may correlate and supplement the subject matter presented in various regular courses.

THIRD GROUP

201–2 *Seminar: Cytology* (3–3) Bowman

Academic year—evening.

211–12 *Research in Cytology* (arr.) Bowman

Academic year—as arranged; summer 1958—Biology 212 (arr.).

299–300 *Thesis* (3–3) Bowman

Academic year—as arranged; summer 1958.

BOTANY*

Russell Bradford Stevens, Ph.D., *Professor of Botany, Executive Officer*

Lyman Bradford Smith, Ph.D., *Professorial Lecturer on Plant Taxonomy*

Kittie Fenley Parker, Ph.D., *Associate Professorial Lecturer on Plant Taxonomy*

Caroline Lander Adams, Ph.D., *Associate Professorial Lecturer in Botany*

Robert Sumner Sigafoos, Ph.D., *Associate Professorial Lecturer on Plant Ecology*

Edward Hacskaylo, Ph.D., *Lecturer on Plant Physiology*

Grace Somers Brush, Ph.D., *Lecturer in Botany*

Henry Marcellus Cathey, Ph.D., *Lecturer on Plant Physiology*

Bachelor of Arts or *Bachelor of Science with a major in Botany (Columbian College—Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 68 and 69.

Required: in addition to the general requirements of Columbian College as stated on pages 82–88, a minimum of twenty-four semester hours in Botany beyond the introductory courses, with collaterals as recommended in conference.

Master of Arts or *Master of Science in the field of Botany (Columbian College).*—Prerequisite: the equivalent of a Bachelor of Arts or Bachelor of Science degree, respectively, from this University with a major in Botany.

Required: the general requirements of Columbian College as stated on pages 89–92.

Doctor of Philosophy (Graduate Council).—See page 97.

First Group

1 *Structure and Functions of the Flowering Plant* (3) Stevens, Adams, Brush

Lecture (2 hours), laboratory (2 hours).
Fall—morning, afternoon, and evening; spring—afternoon; summer 1958.

The typical plant as a working mechanism, with emphasis on the biological significance of plant physiology. Material fee, $7.

2 *Survey of the Plant Kingdom* (3) Stevens, Adams

Lecture (2 hours), laboratory (2 hours).
Spring—morning, afternoon, and evening; summer 1958.

Study of the different kinds of plants, their evolution, ecological relationships, economic significance, and principles of inheritance. Material fee, $7.

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* See also the departments of Biology, Geography, and Zoology.

SECOND GROUP

105 ***Field Botany* (3)** Parker

Lecture (1 hour), laboratory and field (4 hours).
1958–59 and alternate years: spring—evening.

A course, primarily for nonspecialists, emphasizing local spring flora. Prerequisite: Botany 1 or Biology 1, or permission of the instructor.

107 ***Plant Morphology: Lower Groups* (3)** Adams

Lecture (1 hour), laboratory and field (4 hours).
Offered in 1959–60 and alternate years: spring—evening.

Field and laboratory study of the habitat, structure, and identification of representative algae, mosses, and ferns. Prerequisite: Botany 1 and 2 or Biology 1–2.

109 ***Plant Morphology: Seed Plants* (3)** Adams

Lecture (2 hours), laboratory (2 hours).
1959–60 and alternate years: fall—evening.

Comparative study of root, stem, leaf, and flower of seed plants, with special reference to economically important families. Prerequisite: Botany 1 and 2 or Biology 1–2.

116 ***Plant Growth* (3)** Hacskaylo

Lecture (2 hours), laboratory (2 hours).
1958–59 and alternate years: fall—evening.

A course, primarily for nonspecialists, emphasizing practical problems of growing and caring for plants. Prerequisite: Botany 1 or Biology 1, or permission of the instructor.

118 ***Physiology of Bacteria and Fungi* (3)** Hacskaylo

Lecture (2 hours), laboratory (2 hours).
1958–59 and alternate years: spring—evening.

Lectures, literature reviews, and laboratory studies of the physiology of bacteria and fungi. Prerequisite: Botany 131 or permission of the instructor. Material fee, $8.

125–26 ***Plant Taxonomy* (3–3)** Parker

Lecture (1 hour), laboratory and field (4 hours).
1959–60 and alternate years: academic year—evening.

A study of the characteristics, phylogeny, and classification of flowering plants. Field collection and identification. Prerequisite: Botany 1 and 2 or Biology 1–2.

131 *Mycology* (3) Stevens

Lecture (2 hours), laboratory (2 hours).
1958–59 and alternate years: fall—evening.

Prerequisite: Botany 1 and 2 or Biology 1–2. Material fee, $8.

133–34 *Plant Pathology* (3–3) Stevens

Lecture (2 hours), laboratory (2 hours).
1959–60 and alternate years: academic year—evening.

Prerequisite: Botany 1 and 2 or Biology 1–2. Material fee, $8 a semester.

135–36 *Plant Physiology* (3–3) Cathey

Lecture (2 hours), laboratory (2 hours).
1958–59 and alternate years: academic year—evening.

Prerequisite: Botany 1 and 2 or Biology 1–2, and Chemistry 11–12. Material fee, $8 a semester.

141–42 *Plant Ecology* (3–3) Sigafoos

Lecture (1 hour), laboratory and field (4 hours).
1958–59 and alternate years: academic year—evening.

Prerequisite: Botany 1 and 2 or Biology 1–2.

143 *Introduction to Plant Geography* (3)

Lecture (2 hours), laboratory (2 hours).
1959–60 and alternate years: fall—evening.

Prerequisite: Botany 1 and 2 or Biology 1–2, and permission of the instructor.

144 *The Vegetation of North America* (3)

Lecture (2 hours), laboratory (2 hours).
1959–60 and alternate years: spring—evening.

Prerequisite: Botany 1 and 2 or Biology 1–2, and permission of the instructor.

161 *Soils* (3)

Not offered 1958–59.

Composition, characteristics, geographic distribution, and uses of soils. (For students interested in plant distribution, ecology, and soils, Geography 128, *Economic Geography: Agriculture*; 131, *Conservation of Natural Resources*; and 132, *Land Use* are recommended as electives.)

THIRD GROUP

221–22 *Seminar: Taxonomy* (3–3) Smith

1958–59 and every fourth year: academic year—as arranged.

231–32 *Seminar: Mycology and Plant Pathology* (3–3) Stevens

1960–61 and every fourth year: academic year—as arranged.

235–36 *Seminar: Physiology* (3–3)

1959–60 and every fourth year: academic year—as arranged.

241–42 *Seminar: Ecology* (3–3) Sigafoos

1961–62 and every fourth year: academic year—as arranged.

295–96 *Research* (arr.) The Staff

Academic year—as arranged; summer 1958—Botany 295 (arr.). Fee to be arranged.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1958.

BUSINESS AND PUBLIC ADMINISTRATION

Richard Norman Owens, Ph.D., C.P.A., *Professor of Business Administration*
Harold Griffith Sutton, M.S., *Professor of Finance*
Arlin Rex Johnson, Ph.D., *Professor of Business Administration*
Joe Lee Jessup, M.B.A., *Professor of Business Administration*
James Carlton Dockeray, Ph.D., *Professor of Finance, Executive Officer*
David Springer Brown, Ph.D., *Professor of Public Administration*
Montell Ernest Ogdon, Ph.D., *Professorial Lecturer in Business Administration*
Karl Ernest Stromsem, Ph.D., *Professorial Lecturer in Public Administration*
Joseph Leo Krieger, Ph.D., *Professorial Lecturer in Business Administration*
Carl William Clewlow, A.M., *Professorial Lecturer in Business Administration*
William George Torpey, Ph.D., *Professorial Lecturer in Public Administration*
Reuben Horchow, M.B.A., LL.B., *Professorial Lecturer in Business Administration*
Joseph Novak Stonesifer, A.M., *Professorial Lecturer in Business Administration*
Kenneth Frederick McClure, M.S., LL.B., *Professorial Lecturer on Commercial Law*
Felix Ira Shaffner, Ph.D., *Professorial Lecturer in Business Administration*
Charles Edwin Houston, Ph.D., *Professorial Lecturer in Business Administration*
John Clayton, Ph.D., *Associate Professor of Business Administration*
Herbert Hubben, M.S., *Associate Professor of Public Administration*
Leonard Prestwich, Ph.D., *Associate Professor of Business Administration*
Joseph Patrick Murphy, A.B., LL.B., LL.M., *Associate Professorial Lecturer on Commercial Law*
William Williams Edwards, A.M., *Associate Professorial Lecturer in Business Administration*
Roy Brandon Eastin, Ph.D., *Associate Professorial Lecturer in Public Administration*
Irving Samuel Schwartz, A.M., *Associate Professorial Lecturer in Public Administration*

Robert Kaye, A.M., *Associate Professorial Lecturer in Business Administration*

Leonard Cornelius Collins, A.B., LL.M., *Associate Professorial Lecturer on Commercial Law*

Alfred Gaylord Obern, Ph.D., *Assistant Professor of Public Administration*

Robert Fenn Towson, Jr., M.B.A., *Assistant Professor of Business Administration*

Eric Theodore Hagberg, A.M., *Lecturer in Public Administration*

John Provan, M.S., *Lecturer in Public Administration*

Robert John Bond, A.B., *Lecturer in Business Administration*

Payson Barber Langley, B.E., C.P.C.U., *Lecturer on Insurance*

Bachelor of Arts in Government with a major in Business Administration (School of Government).—For curricula, see pages 186–87, 189–90.

Master of Business Administration (School of Government).—Prerequisite: an acceptable undergraduate major in Business Administration or the equivalent.

Required: the general requirements for the degree as stated on page 199.

Master of Arts in Public Administration (School of Government).—for curricula see pages 197–98.

Master of Arts in Personnel Administration (School of Government).—For curriculum see pages 198–99.

Doctor of Business Administration (School of Government).—Prerequisite: a Master's degree in Business Administration or a related field, or the equivalent, and proficiency in Statistics and Accounting to the satisfaction of the Committee on Doctoral Studies.

Required: thirty hours of graduate work beyond the Master's level, the passing of a general examination in three fields, and the writing and defending of a dissertation. See pages 199–200.

Bachelor of Arts in Education with teaching fields in Business Education (School of Education).—Prerequisite: the Eduction curriculum, page 70.

Required: the Business Education option, pages 164–65, and the professional courses listed on page 171.

BUSINESS ADMINISTRATION

SECOND GROUP

101 *Business Organization and Combination* (3) Clayton

Fall—morning and evening; spring—evening; summer 1958.

Simple and interrelated forms of business enterprise and their control by government.

102 *Business Management* (3) Owens, Towson

Fall—morning; spring—morning and evening.

The management movement, organization of an enterprise, principles of management and their application to various departments of an enterprise.

105 *Personnel Management in Industry* (3) Owens, Towson

Fall—morning; spring—evening; summer 1958.

Organization and work of the personnel department, human relations in business.

106 *Problems in Personnel Management* (3) Owens, Stonesifer

Spring—morning.

Principles of human relations illustrated by cases drawn from business and industry. Prerequisite: Business Administration 105.

107 *Management-Labor Contracts* (3) Hubben

Spring—evening.

Design and administration of collective bargaining agreements from the viewpoint of developing good management-labor relations.

109 *Office Management* (3) Horchow

Fall—evening; spring—evening.

Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems.

113 *Real Estate* (3) Horchow

Fall—evening.

Fundamentals of real estate practice; leasing and property management; valuation, financing, and taxation.

116 *Urban Transportation* (3) Clayton

Not offered 1958–59.

Local transportation in economic development; regulation, finance, operation, and management of transit services; community planning for streets, highways, parking, and traffic control.

121 *General Insurance* (3) Horchow

Spring—evening.

A general course in underlying principles of property, life, marine, and casualty insurance, and the function of insurance in the ecomonic life of a business or individual. Prerequisite: Economics 1–2.

123–24 *Property and Casualty Insurance A and B* (2–2) Langley

Academic year—evening.

The principles and practices of property and casualty insurance with emphasis on the economics of insurance, types of carriers, contract provisions, agency and brokerage, and state regulation and supervision.

125–26 *Property and Casualty Insurance C and D* (2–2) Langley

1959–60 and alternate years.

The principles and practices of property and casualty insurance with emphasis on theory of probability, rates and rating, reserves, financial statements, and investments; loss adjustment and loss prevention. Prerequisite: Business Administration 123–24.

127–28 *Property and Casualty Insurance E and F* (2–2) Langley

1959–60 and alternate years.

Principles of accounting; principles of business and personal finance; business organization and agency management.

129–30 *Property and Casualty Insurance G and H* (2–2) Langley

Academic year—evening.

Insurance law with particular attention given to construction of insurance contracts, and general commercial law as it relates to contracts, agencies, partnerships, corporations, personal property, real estate and mortgages, negotiable instruments, bankruptcy, bailments, common and private carriers, and negligence.

131 *Business Finance* (3) Clayton, Towson

Fall—morning; spring—morning and evening.

Basic principles involved in the financing of business enterprises. Prerequisite: Accounting 1–2.

136 *Commercial Credit* (3) Prestwich

Spring—evening; summer 1958.

Types and sources of credit information, credit relationships from the standpoint of the commercial bank and the commercial business enterprise. Prerequisite: Accounting 1–2.

138 *Investments* (3) Dockeray, Towson

Spring—evening; summer 1958.

Analysis of factors of investment credit with application to different types of investments, proper selection of investments for various classes of investors, regulation. Prerequisite: Accounting 1–2.

141 *Principles of Marketing* (3) Prestwich, Towson

Fall—morning; spring—evening; summer 1958.

A survey of marketing, giving particular attention to consumption, retailing, wholesaling, and sales management; the entire marketing structure and its relation to the total economy. Prerequisite: Economics 1–2.

142 *Marketing Problems* (3) Towson

1959–60 and alternate years.

Marketing principles applied to specific distribution policy and operating problems of retailers, wholesalers, and manufacturers handling consumer and industrial goods. Prerequisite: Business Administration 141.

143 *Marketing Research* (3) Towson

Not offered 1958–59.

Study of market research methods and techniques; sources of data; the use of market research in business operations.

145 *Sales Management* (3) Towson

Fall—evening.

Organization of the sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs. Prerequisite: Business Administration 141.

146 *Sales Management Problems* (3) Jessup

Not offered 1958–59.

Problems of marketing executives with respect to planning sales programs, territories, and salesmen's quotas; selection, training, and supervision of sales force. Prerequisite: Business Administration 145.

147 *Advertising* (3) Prestwich

Fall—evening.

Advertising as a function of marketing and merchandising; evaluation, purchase, criticism, and control of advertising; uses and limitations of advertising as a tool of management.

148 *Wholesaling* (3) Prestwich

Spring—morning.

The wholesale function; organization and types; economics of wholesale authorities.

149 *Retail Advertising and Sales Promotion* (3) Prestwich

Fall—evening.

Operation of the advertising department in a retail store. Use of newspaper, radio, and television advertising by retail stores. Other advertising media, programming, and budgeting.

150 *Principles of Purchasing* (3) Prestwich, Towson

Spring—morning.

Organization for purchasing, purchasing policies, market relationships, selection of merchandise, purchasing information and records.

151 *Retailing* (3) Prestwich

Fall—evening.

Principles and problems in retail store management including financing, location, personnel management, store layout, buying, pricing, stock control, accounting, sales promotion, and customer services.

152 *Retail Merchandising and Control* (3) Prestwich

Spring—evening.

Managerial problems and policies with reference to profit calculations, pricing, purchase, planning, stock control, merchandise, and expense budgets; inventory evaluation and other related phases of retail merchandising.

153 *Principles of Personal Selling* (3) Prestwich

Not offered 1958–59.

Basic principles that underlie personal selling and the practical application of these principles. Emphasis is given to the human factor. Career opportunities and the role of selling in our economy are also considered.

158 *Traffic Management* (3) Kaye

Spring—evening.

Organization and records of traffic department, routing of shipments, services by carriers, rates and charges, relation of shipper to transportation agencies.

161 *Commercial Law: Contracts, Sales, Agency, and Bailments* (3) Collins, McClure

Fall—afternoon and evening.

162 *Commercial Law: Negotiable Instruments, Property, Mortgages* (3) Collins, McClure

Spring—afternoon and evening.

163 *Law in Relation to the Form of Business Units: Corporations, Partnerships, and Trusts* (3) Murphy

Fall—evening.

171 *Principles of Transportation* (3) Clayton

Fall—evening.

Impact of transport on society; development, economic characteristics, services, rates, and regulation of the various modes of intercity transportation.

172 *Public Utilities* (3) Clayton

Spring—evening.

The public utility concept; development, services, ratemaking, regulation, and public policy.

173 *Commercial Motor Transportation* (3) Clayton

Fall—evening.

Highway financing, economic characteristics, operations, rates, regulation, regulatory problems and policies, selling.

174 *Commercial Air Transportation* (3) Clayton

Spring—evening.

Development, economic characteristics, rates, regulation, types of carriers, operations, regulatory policy.

175 *Introduction to Foreign Trade* (3) Kaye

Fall—evening.

Terminology, trade usages and practices, conditions essential to successful trading, economic bases of international trade, obstacles to trade, tariffs, impact of governmental controls on private trade. Prerequisite: Economics 1–2.

176 *Exporting and Importing* (3) Kaye

Not offered 1958–59.

Policy and operating questions of foreign trade, financing and documentation of shipments. Prerequisite: Business Administration 175.

178 *Foreign Markets* (3) Ogdon

Spring—evening.

Pattern of world trade by countries and commodities, methods of preparing market surveys, selected regional market analyses. Prerequisite: Economics 1-2.

191 *Business Reports and Analyses* (3) Brown

Not offered 1958–59.

Research in specific business problems and reports for management use. Open to seniors.

193 *Management Communication* (3) Jessup, Edwards

Fall—evening.

A survey course in the problems of communication; written communication: style and format; oral communication: oral briefing and presentation; group leadership; rapid reading; completed staff work; and related subjects.

195 *Controllership* (3)

Fall—evening.

The duties, responsibilities, and place of the controller in a business organization; relations of controller to other departments and regulatory bodies; and the controller's relation to price setting and inventories, depreciation policies, internal auditing, expense control and budgeting; and financial reports to management, stockholders, and employees. Prerequisite: Accounting 1–2. Open to seniors.

197 *Introduction to Business Policy* (3) Towson

Fall—evening.

Significance of business policies in management; formulation of policies; relation of various organizational levels to policy making; some significant policies, including case problems.

198 *Problems in Business Management* (3) Towson, Prestwich

Fall—morning and evening; spring—morning and evening; summer 1958.

Principles and methods of management illustrated by cases drawn from business and industry. Prerequisite: Business Administration 102. Open to seniors.

THIRD GROUP

201 *Advanced Management* (3) Towson

Fall—evening.

An advanced course in management emphasizing principles of management in relation to business enterprise.

209 *Seminar in Personnel Management* (3) Stonesifer

Fall—evening.

Research in advanced problems of personnel management.

218 *Data Processing* (3) ————

Spring—evening.

Selecting and adapting data processing equipment, characteristics of leading systems, elements of programming.

231 *Corporate Financial Problems* (3) Dockeray, Houston

Fall—evening.

Financial practice in promotion, consolidation, and mergers; capital structure adjustments; and reorganization.

232 *Seminar in Business Finance* (3) Dockeray

Spring—evening; summer 1958.

Research in advanced financial problems.

237 *Security Analysis* (3) Dockeray

Fall—evening.

An advanced course in the applications of investment principles and analytical techniques to the selection of investments. Prerequisite: Business Administration 138.

238 *Seminar in Investments* (3) Dockeray, Shaffner

Spring—evening.

Research in investment problems, techniques of selection and the management of various types of funds. Prerequisite: Business Administration 138.

241–42 *Seminar in Marketing* (3–3) Johnson

Academic year—evening.

An advanced course in marketing, emphasizing special and current problems in the field. (Business Administration 241 is not a prerequisite for Business Administration 242.)

251 *Seminar in Retailing* (3) Prestwich

Fall—evening.

An advanced course in retailing giving emphasis to trends in the development of retailing organizations and techniques.

268 *Management Engineering* (3) Clewlow

Fall—evening.

Analysis of the techniques for initiation and implementation of management engineering programs, with emphasis on organization and methods surveys, including the study of work measurements, work simplification, management audits, and other management improvement programs.

273–74 *Readings in Business* (3–3) The Staff

Academic year—as arranged.

Advanced readings in the fields of finance, marketing, and personnel management. Admission by permission of the instructor.

278 *The Dynamics of Business* (3) Clayton

Summer 1958.

An analysis of the structure of American business, including a study of trend and cyclical change in economic activity and their bearing upon governmental policy.

286 *Management in the Armed Forces* (3) Clewlow

Not offered 1958–59.

Special problems of military organization and management; applicability of business management techniques to the armed forces.

287 *Relation of Government to Business* (3) Clayton

Spring—evening.

Activities of government in their relation to business management in such areas as labor relations, wages, production, and prices.

288 *Executive Leadership* (3) Krieger

Spring—evening.

Examination of principles and problems of executive leadership and development; intensive consideration of basic issues and guides to executive action in business and public administration; review of the literature, significant research findings, and practical illustrations.

291–92 *Seminar in Business Management* (3–3) Owens

Academic year—evening; summer 1958—Business Administration 292 (3).

Research on various phases of management, including business, industrial, and personnel management.

293–94 *Business Research* (3–3) The Staff

Not offered 1958–59.

296 *Seminar in Controllership* (3) Jessup

Spring—evening.

Research on advanced problems of the controller in all types of business organization and the Federal Government.

297–98 *Business Policy* (3–3) Jessup

Academic year—evening.

Problems of management are analyzed with the view of developing a practical solution; cases are used to show the problems of personnel in marketing, industrial management, finance, etc.

299–300 *Thesis* (3–3) Dockeray and Staff

Academic year—evening; summer 1958.

Courses Offered in Special Programs

In addition to the regular courses announced above, the University offers the following business administration courses for students enrolled in the following special programs: Navy Graduate Comptrollership Program, Air Force Advanced Management Program, and Engineering Administration.

191 *Business Reports and Analyses* (3)

235 *Financial Management* (3)

250 *Contract Administration* (3)
253 *Procurement and Distribution* (3)
261 *Seminar in Advanced Management* (3)
263–64 *Business Organization and Management* (3–3)
268 *Management Engineering* (3) (Summer 1958)
269 *Readings and Conferences in Controllership* (2 or 3)
275–76 *Human Relations in Business* (3–3)
284 *Readings and Conferences in Management* (2)
290 *Research Seminar in Management* (3)
295 *Research Seminar in Controllership* (3)

PUBLIC ADMINISTRATION

Third Group

210 *The Management Function* (3) Eastin

Spring—evening.

Principles and processes of management with particular attention to planning of organization, direction and coordination of work, internal communication, and measurement of achievement in government.

211 *Problems of Governmental Organization* (3) Obern

Fall—evening; summer 1958.

Theories and principles of organization; analysis of problem areas in administration, such as decentralization, staff-line, field-headquarters, and executive-legislative relationships.

212 *Case Studies in Administration* (3) Obern

Spring—evening.

Analysis and discussion of problems in public management, approached by the group using primarily the case method.

215 *Comparative Administrative Systems* (3) Obern

Fall—evening.

Examination and analysis of the administrative systems of the major foreign governments with particular attention to practices applicable to administration in the United States.

216 *Administrative Analysis and Research* (3) Obern

Spring—evening.

Management engineering; techniques of organization survey and work analysis; improvement of administrative effectiveness; application of principles of scientific management.

217 *New Tools of Management* (3) Brown

Fall—evening.

This course provides information for the advanced student on latest developments in new methods of administration, including electronics devices (automative equipment), operations research, quality control, attitude measurement, and similar activities. Subjects discussed by guest lecturers with opportunity for individual discussion and consultation.

221–22 *Staff Functions in Government* (3–3) Brown, Obern

Academic year—evening.

Designed primarily to provide an understanding of the nature, use, and problems of the staff functions as tools of management. Survey of such staff areas as personnel, budgeting, controllership, procurement, property management, the agency lawyer, security, public relations and information, planning, research, the secretariat, management engineering, auditing, accounting, and administrative services.

225–26 *Internship in the Administrative Processes* (3–3) Hubben

Academic year—as arranged.

This course is open only to persons selected by government agencies for participation in approved intern programs.

231 *Public Personnel Management* (3) Torpey

Fall—evening.

Basic principles; structure and organization of personnel offices; responsibilities; inter-agency relationships; personnel staffing, training and work measurement.

232 *Personnel Procedures and Problems* (3) Torpey

Spring—evening; summer 1958.

Study of such personnel functions as recruitment, selection, placement, promotion, supervision, evaluation, classification, and training. Practical problems of personnel administration.

233 *Employee Development and Utilization* (3) Hubben

Fall—evening.

Study of ways and means of increasing employee potential; the use of training programs and executive development; incentive systems.

237 *Intermediate Management and Supervision* (3) Eastin

Fall—evening.

The roll of the supervisor and intermediate manager; methods for improving group performance; work measurement; pertinent regulations governing federal personnel.

241 *Human Relations in Governmental Administration* (3)

Hubben

Spring—evening.

Factors involved in working with people in governmental institutions. Study and research in human problems in management; discussion of programs for improved human relationships.

251 *Governmental Budgeting* (3)

Schwartz

Fall—evening; spring—evening.

The roll of budgeting in management; the principles and practices of budgetary formulation and administration.

252 *Planning and Administering the Agency Program* (3)

Provan

Spring—evening.

Performance budgeting; relating the work program to the fiscal program; budgetary evaluation. This course is primarily for students who have completed Public Administration 251.

254 *Controllership in the Federal Services* (3)

Kreiger

Fall—evening.

Function of the controller in federal agencies; special problems analyzed; comparison of the controller function in government and business.

259 *Government Procurement and Property Management* (3)

Not offered 1958–59.

Principles and problems of government procurement; accounting and inventory; storage; development of specifications; property management.

260 *Policy Formulation and Administration* (3)

Brown

Spring—evening.

Policy development and administration as the goals of the agency. Participation in the process at various organization levels; communication; coordination and control.

261 *Public Opinion and the Administrator* (3)

Stromsem

Fall—evening.

Theories, techniques, and methods of working with the public; the use of interest groups in developing governmental programs; evaluating public relations programs; the importance of timing; use of public opinion measurement techniques.

262 *Contemporary Administrative Theory and Practice* (3) Stover

Fall—evening.

Current theories and trends in management with particular attention to the behavioral sciences, communications, and applicability of research.

271 *Reading and Conference Course in Public Management and Administration* (3) Brown

Not offered 1958–59.

The purpose of this course is to provide advanced students with directed reading in specific areas of public management and administration.

272 *Reading and Conference Course in Public Personnel Administration* (3) Hubben

Spring—as arranged.

The purpose of this course is to provide advanced students with directed reading in specific areas of public personnel administration.

297 *Seminar in Public Administration* (3) Brown and Staff

Summer 1958.

Advanced research on various phases of public administration including methods of policy formulation and coutrol, the application of systems to management, administration problems of bureaucratic relationships.

299–300 *Thesis* (3–3) Brown and Staff

Academic year—evening; summer 1958.

One semester of the two semesters required will be conducted in seminar fashion.

Courses Offered in Special Programs

In addition to the regular courses announced above, the University offers the following public administration courses for students enrolled in the Air Force Advanced Management Program and in Engineering Administration.

213 *Administration in Government* (3)

221 *Staff Functions in Government* (3)

251 *Governmental Budgeting* (3) (Summer 1958)

260 *Policy Formulation and Administration* (3)

CHEMISTRY

Benjamin Douglass Van Evera, Ph.D., Sc.D., *Professor of Chemistry*
Samuel Nathaniel Wrenn, Ph.D., *Professor of Chemistry*
Charles Rudolph Naeser, Ph.D., *Professor of Chemistry, Executive Officer*
Robert Corbin Vincent, Ph.D., *Professor of Chemistry*
William Frederick Sager, Ph.D., *Professor of Chemistry*
Reuben Esselstyn Wood, Ph.D., *Professor of Chemistry*
James Willard Harkness, B.S., Ed.M., *Associate Professor of Chemistry*
*Theodore Peter Perros, Ph.D., *Associate Professor of Chemistry*
William Edward Schmidt, Ph.D., *Associate Professor of Chemistry*
David Gover White, B.Chem.Eng., Ph.D., *Associate Professor of Chemistry*
Clarence William Schimelpfenig, Ph.D., *Assistant Professor of Chemistry*
Margaret Willcox McPherson, Ph.D., *Lecturer in Chemistry*
Edith Schwartz, A.M., *Instructor in Chemistry*

Registration.—Before completing registration each student must obtain from the representative of the Department an assignment to lecture, recitation, and laboratory sections.

Bachelor of Arts or *Bachelor of Science with a major in Chemistry (Columbian College—Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 68 and 69. The following first-group courses must be included: Chemistry 11-12, 21, and 22; Mathematics 19 and 20; Physics 5, 6, 7, and 8.

Required: the general requirements of Columbian College, as stated on pages 82–88, including the following second-group courses: Chemistry 102 (or 131–32), 111–12, 113–14, 122, 151–52, and 135 or 155 (two semester hours), and a grade of "pass" on the chemistry major examination at the end of the senior year. The correlated knowledge upon which the student will be examined includes the following fields: (1) analytical chemistry, (2) inorganic chemistry, (3) organic chemistry, (4) physical chemistry. The work of the junior and senior years must be approved by the Department. The German language is strongly recommended for all majors, and both French and German are recommended for students planning to do graduate work.

Master of Arts or *Master of Science in the field of Chemistry (Columbian College).*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Chemistry from this University, or the equivalent.

Required: the general requirements of Columbian College as stated on pages 89–92. The thirty hours of required work must include Chemistry 131–32, 193, 211–12, 251–52, 299–300, and the program must include at least four semester hours of laboratory courses. On the basis of failure to pass qualifying examinations given during the first week of classes, a student may be excluded from the required courses and advised to review prerequisite courses. A reading knowledge examination in French or German (German preferred) must be passed before the second half of the work is started.

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[*] On sabbatical leave spring semester 1958–59.

Doctor of Philosophy (Graduate Council).—See page 97.

Bachelor of Science in Engineering with an option in Chemistry (School of Engineering).—See pages 138–41 and 143–44. The Chemistry courses required for this degree are the same as those required for the Bachelor of Science degree with the major in Chemistry as itemized above.

Bachelor of Arts in Education with a teaching field in Chemistry (School of Education).—Prerequisite: the Education curriculum, page 70.

Required: the Chemistry option, pages 165–66; and the professional courses listed on page 171.

FIRST GROUP

3–4 *Fundamentals of Physical Science* (4–4) Schimelpfenig

A year course: credit is not given for the first half until the second half is completed.

Academic year: lecture (3 hours)—morning, laboratory (3 hours)—afternoon.

Introduction to methods and achievements of physical science, covering selected topics in chemistry, physics, astronomy, and geology. For nonscience majors. Laboratory fee, $11 a semester.

11–12 *General Chemistry* (4–4) The Staff

A year course: credit is not given for the first half until the second half is completed.

Lecture (2 hours), laboratory (4 hours), recitation (1 hour).

First half: fall—morning, afternoon, and evening; spring—morning, afternoon, and evening; summer 1958. *Second half:* fall—afternoon and evening; spring—morning, afternoon, and evening; summer 1958.

Elementary course in general chemistry. Prerequisite: one year of high school algebra. Laboratory fee, $18 a semester.

21 *Qualitative Inorganic Analysis* (4) Vincent

Lecture (2 hours), laboratory (4 hours).

Fall—afternoon and evening; spring—afternoon and evening; summer 1958.

Theoretical and practical study of methods of separating and identifying the more common cations and anions using semi-micro techniques. Prerequisite: Chemistry 12. Laboratory fee, $18.

22 *Quantitative Inorganic Analysis I* (4) Schmidt

Spring: lecture (2 hours)—morning and evening; laboratory (6 hours)—morning, afternoon, and evening. Summer 1958

Theory and practice of quantitative analysis by typical volumetric and gravimetric procedures. Prerequisite: Chemistry 21. Laboratory fee, $18.

SECOND GROUP

102 *Descriptive Inorganic Chemistry* (2) White

Spring—morning.

An intermediate level course emphasizing the descriptive chemistry of the elements. Prerequisite: Chemistry 22, 151.

111–12 *Physical Chemistry Lectures* (3–3) Wood

A year course: credit is not given for the first half until the second half is completed.
Academic year—morning and evening.

Introduction to physical chemistry. Students registering for Chemistry 111-12 must register concurrently for Chemistry 113-14 unless they already have adaquate credit for physical chemistry laboratory. Prerequisite: either (1) Chemistry 22 and 152, Mathematics 20, Physics 8; or (2) Chemistry 21, Mathematics 20, Physics 8 and 55.

113–14 *Physical Chemistry Laboratory* (2–2) Wood

A year course: credit is not given for the first half until the second half is completed.
Academic year—afternoon and Saturday (morning and afternoon).

Laboratory to accompany Chemistry 111–12. Students registering for Chemistry 113–14 must register concurrently for Chemistry 111–12 unless they already have credit for lectures in physical chemistry. Laboratory fee, $18 a semester.

122 *Quantitative Inorganic Analysis II* (4) Schmidt

Fall: lecture (2 hours)—afternoon and evening; laboratory (6 hours) —morning and evening.

Continuation of Chemistry 22 including theory and practice of separations, organic reagents, electrochemistry, and colorimetry in analysis. Prerequisite: Chemistry 22. Laboratory fee, $18.

131–32 *Inorganic Chemistry* (2–2) Naeser

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

Application of modern chemical theories to inorganic substances and reactions; detailed study, developed from the periodic table, of the descriptive chemistry of the more common elements. Prerequisite: Chemistry 152. Prerequisite or concurrent registration: Chemistry 111–12 and 113–14.

135–36 *Inorganic Chemistry: Preparations* (2–2) Perros

First half: fall—morning; spring—evening. *Second half:* spring—evening.

Application of the technique of inorganic chemistry to the preparation and purification of a list of selected substances. Prerequisite: Chemistry 152. Prerequisite or concurrent registration: Chemistry 122. Laboratory fee, $18 a semester.

151–52 *Organic Chemistry* (4–4) Sager, Wrenn

A year course: credit is not given for the first half until the second half is completed.

First half: fall—lecture (3 hours), morning and evening; laboratory (3 hours), afternoon and evening; summer 1958. *Second half:* spring—lecture (2 hours), morning and evening; laboratory (6 hours), afternoon and evening; summer 1958.

Chemistry of the compounds of carbon. Prerequisite*: Chemistry 21. Laboratory fee: Chemistry 151, $11; Chemistry 152, $18.

155 *Organic Chemistry: Preparations* (2 or 3) Wrenn

Spring—evening.

Synthesis of organic compounds and application of the technique of organic chemistry to the preparation of pure compounds, using larger amounts and greater refinements than in Chemistry 151–52. Prerequisite: Chemistry 22 and 152. Laboratory fee, $10.50 a semester hour.

156 *Qualitative Organic Analysis* (3) Schimelpfenig

Fall: lecture (1 hour), laboratory (6 hours)—evening.

Identification of pure organic compounds, separation of mixtures, and identification of their components. Required of all students planning thesis work in Organic Chemistry. Prerequisite: Chemistry 22 and 152. Laboratory fee, $18.

191 *History of Chemistry* (2) Perros

1959–60 and alternate years.

Historical development of chemistry. Prerequisite: Chemistry 22 and 152.

193 *Chemical Literature* (1) Wrenn

Fall—evening.

A general course in chemical literature with reference work and reports. Prerequisite: Chemistry 22 and 152. Prerequisite or concurrent registration: Chemistry 111–12 and 113–14.

THIRD GROUP

203 *Chemical Kinetics* (2) Wood

1959–60 and alternate years.

The rates of chemical reactions and the factors influencing them. Prerequisite: Chemistry 112.

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[*] This prerequisite may be waived in the case of the student who has earned a grade of C or better in Chemistry 12 within the past two years.

Wood

211–12 *Advanced Physical Chemistry* (2–2)

Academic year—evening.

Development of the principles of thermodynamics and kinetic theory and their application to chemical problems. Prerequisite: Chemistry 111–12 and 113–14.

Sager

216 *Statistical Mechanics* (3)

1958–59 and alternate years: fall—evening.

An introduction to classical and quantum statistics designed to acquaint the student with the basic principles and application of the method. Prerequisite or concurrent registration: Chemistry 212, or permission of instructor.

Schmidt

221–22 *Advanced Analytical Chemistry* (2 or 3–2 or 3)

Lecture (2 hours), laboratory (3 hours—optional). 1958–59 and alternate years. *First half:* fall—evening. *Second half:* not offered 1958–59.

Theory and application of recent methods of analysis including electrical and optical instrumentation. Prerequisite: Chemistry 22 and 122. The lectures may be taken for 2 credits a semester without laboratory work; either half may be taken first. Laboratory fee, $11 a semester.

Perros,
White

231–32 *Special Topics in Inorganic Chemistry: the Chemistry of the Less Familiar Elements* (2–2)

1959–60 and alternate years.

First half: the lanthanide and actinide elements, emphasis on metallurgy and chemistry; platinum metals, emphasis on complex ion formation. *Second half:* certain hydrides, organometallic and organosilicon compounds, and metal carbonyls; chemistry and uses of less common elements such as germanium and gallium. Prerequisite: Chemistry 132 and 152.

233–34 *Radiochemistry* (2–2)

Not offered 1958–59.

The preparation, properties, and uses of radioactive isotopes, both natural and artificial. Prerequisite: Chemistry 131–32.

Sager

251–52 *Advanced Organic Chemistry* (3–3)

Academic year—evening.

Syntheses, reactions, and properties of carbon compounds; fundamental theories of organic chemistry. Prerequisite: Chemistry 152. Prerequisite or concurrent registration: Chemistry 111–12, 113–14.

253 *Advanced Synthetic Organic Chemistry* (3) Wrenn

Fall—evening.

Study of reactions employed in the synthesis of organic compounds. Prerequisite: Chemistry 251.

257 *Theoretical Organic Chemistry* (3) Sager

1959–60 and alternate years.

Survey of modern theories of organic chemistry with emphasis on reaction mechanisms. Prerequisite: Chemistry 252.

291–92 *Seminar: Recent Developments in Chemistry* (1–1) The Staff

Not offered 1958–59.

295–96 *Research* (arr.) The Staff

Academic year—as arranged; summer 1958.

Research on problems approved by the Staff. Open to qualified students with advanced training. Laboratory fee, $7.50 a semester hour.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1958.

Laboratory fee, $18 a semester.

CIVIL ENGINEERING

Carl Hugo Walther, B.E., M.C.E., *Professor of Civil Engineering*

Martin Alexander Mason, B.S. in Eng., Ing.-Dr., *Professor of Civil Engineering*

Robert Aaron Hechtman, M.S. in C.E., Ph.D., *Professor of Civil Engineering, Executive Officer*

Waldo Edward Smith, B.E. in C.E., M.S. in C.E., *Professorial Lecturer in Civil Engineering*

Melvin Raymond Meyerson, M.S. in Met.E., *Professorial Lecturer in Civil Engineering*

Ralph Edward Fuhrman, B.S. in C.E., M.S. in Eng., D.Eng., *Professorial Lecturer in Civil Engineering.*

Alvin Loewer, Jr., B.E., Dr. Eng., *Professorial Lecturer in Civil Engineering*

Charles Henry Conrad, B.S. in Arch., *Professorial Lecturer in Civil Engineering*

*Raymond Pugh Eyman, C.E., *Associate Professor of Civil Engineering*

Joseph Lambert Intermaggio, M.R.P., *Associate Professorial Lecturer in Civil Engineering*

Shelton Mann Gay, Jr., M.S., *Lecturer in Civil Engineering*

George Joseph O'Hara, M.S. in C.E., *Lecturer in Civil Engineering*

William Courtney Schnobrich, M.S. in C.E., *Lecturer in Civil Engineering*

Robert Charles Smith, M.S. in M.E., *Lecturer in Civil Engineering*

Gershon Kulin, M.S., Sc.D., *Lecturer in Civil Engineering*

Sheldon Norman Salzman, M.S., *Lecturer in Civil Engineering*

Bachelor of Civil Engineering (School of Engineering).—See pages 138-41 for statement of requirements.

Master of Science in Engineering (School of Engineering).—See pages 144-47 for statement of requirements.

First Group

12 *Surveying* (3) Eyman

Spring: lecture (2 hours), field work (3 hours)—Saturday.

Principles, methods, and instruments used in making space measurements, including layout, elements of simple curves, coordinate system, and treatment of observational errors. Prerequisite: Mathematics 12, Mechanical Engineering 4. Surveying fee, $13.

21 *Statics* (3) The Staff

Fall—morning and evening; spring—morning and evening.

Composition and resolution of forces in two and three dimensions; equilibrium; centroids, centers of gravity, moments of inertia; friction; analysis of trusses, frames, and cables; shear and bending moment in beams; virtual work. Prerequisite: Physics 6. Prerequisite or concurrent registration: Mathematics 20.

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* On limited service.

24 *Strength of Materials* (3) The Staff

Fall—morning and evening; spring—morning and evening; summer 1958.

Development and application of principles necessary to analyze stresses in and deformation of simple machine and structural components, combined stresses, strain energy, buckling of columns and beams, design of simple members and joints, composite members. Prerequisite: Civil Engineering 21, Mathematics 20.

Second Group

121 *Dynamics* (3) The Staff

Fall—morning and evening; spring—evening.

Kinematics; kinetic friction; translation, rotation, and plane motion of rigid bodies; work; energy; power; impulse; momentum; impact; simple vibrations. Prerequisite: Civil Engineering 21, Mathematics 20.

125 *Engineering Materials* (4) Murdaugh

Fall: lecture—morning and evening; laboratory—afternoon and evening.

Mechanical behavior of engineering materials; including mechanical testing, elasticity, plasticity, fracture, ductility, creep, and fatigue; elements of metallurgy and physics of metals. Prerequisite: Chemistry 12, Physics 8, Civil Engineering 24. Laboratory fee, $11.

128 *Substructures* (3)

1958–59 and alternate years: spring—afternoon; 1959–60 and alternate years: spring—evening.

A limited study of substructure materials including soils and rocks and their properties as foundation material; seepage; plastic equilibrium; lateral earth pressures, bearing capacity, and settlement; design of simple substructures. Prerequisite: Civil Engineering 125 and 143.

132 *Fluid Mechanics* (3) Mason and Staff

Spring: lecture—morning and evening; laboratory—afternoon and evening.

Development of the fundamental principles of flow of viscous and ideal compressible and incompressible fluids; dimensional analysis and model theory; laboratory work emphasizes principles, analysis of tests, and systematic observations of phenomena. Prerequisite: Mathematics 103, Civil Engineering 121, Mechanical Engineering 113. Laboratory fee, $11.

135 *Hydraulic Engineering* (3) Smith

Fall—evening.

Applied fluid mechanics, hydrology, principles of water conservation; introduction to flood control, water power, drainage and irrigation, canalization of rivers, multiple-purpose projects, and general development of water resources. Prerequisite: Civil Engineering 132.

138 *Sanitary Engineering* (3) Fuhrman

Spring—evening.

Collection, storage, purification, and distribution of water; sewerage systems and treatment of sewage. Prerequisite: Chemistry 12, Civil Engineering 135.

143–44 *Structural Theory and Analysis I-II* (4–4) Walther, Hechtman

1958–59 and alternate years: academic year—afternoon; 1959–60 and alternate years: academic year—afternoon and evening.

Structural behavior of statically determinate and indeterminate beams, frames, and trusses, and the application of basic principles to their analysis; moving loads; structural laboratory including structural model analysis. Prerequisite or concurrent registration: Civil Engineering 125. Laboratory fee, $11 a semester.

145 *Steel and Timber Structures* (3) Walther, Hechtman

1958–59 and alternate years: fall—evening; 1959–60 and alternate years: fall—afternoon.

Design of steel and timber buildings, bridges, and details; structural properties of steel and timber. Prerequisite: Civil Engineering 144.

146 *Reinforced Concrete* (3) Walther, Hechtman

1958–59 and alternate years: spring—evening; 1959–60 and alternate years: spring—afternoon.

Theory and design of plain and reinforced concrete structures. Prerequisite: Civil Engineering 144.

153 *Structural Theory and Analysis III* (3)

1959–60 and alternate years: fall—evening.

Further treatment of statically indeterminate structures, introduction to plastic analysis, numerical and approximate methods of analysis. Prerequisite: Civil Engineering 144, Mathematics 103.

154 *Structural Dynamics* (3) Walther, O'Hara

1958–59 and alternate years: spring—afternoon; 1959–60 and alternate years: spring—evening.

Theory of mechanical vibrations; vibrations in and dynamic loading on structures. Prerequisite: Civil Engineering 153 or 157.

157 *Advanced Strength of Materials* (3) Walther

1958–59 and alternate years: fall—late afternoon; 1959–60 and alternate years: fall—evening.

Selected topics in mechanics of deformable bodies, including: stresses at a point, general flexure, bending of curved beams, torsion, stress concentration, limitations of theories of failure, thick tubes, energy methods, plates and shells, and deformations beyond the elastic limit. Prerequisite: Civil Engineering 125, Mathematics 112. Prerequisite or concurrent registration: Civil Engineering 144 or Mechanical Engineering 123.

163 *Transportation Engineering* (3) ———

Fall—evening.

Economics, location, construction, operation, and maintenance of transportation systems. Prerequisite: Civil Engineering 12, 125, senior standing or permission of the instructor.

168 *Regional and Urban Planning* (3) ———

Spring—evening.

Introduction to regional and urban planning with emphasis on requirements for transportation systems. Prerequisite: Civil Engineering 163.

195–96 *Problems in Civil Engineering* (arr.) The Staff

Academic year—as arranged.

Special problems approved by the Staff. Prerequisite: senior standing.

THIRD GROUP*

224 *Plates and Shells* (3) ———

Fall—evening.

Pure bending of flat plates, laterally loaded flat plates, flat rectangular plates with various edge conditions, bending of flat plates under combined lateral and transverse loads, curved shells.

226 *Plasticity of Solids* (3)

1959–60 and alternate years: spring—evening.

Plastic flow and fracture of solids; theory of perfectly plastic solids, including basic concepts, plastic deformation of simple trusses and beams, and plane strain problems; theory of fracture.

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* Prerequisites for graduate courses are not stated explicitly. Instructors in individual courses will state prerequisites and may recommend preparatory work to be completed prior to admission to the course.

251 *Theory of Structures* (3) Hechtman

Fall—evening.

Classical and modern methods of structural analysis; basic theory of structures; statically indeterminate structures, including continuous beams and trusses, arches, and suspension bridges; limit-load analysis; special problems.

256 *Theory of Elastic Stability* (3) Hechtman

1958–59 and alternate years: spring—evening.

Beam-column problems and methods of analysis (including numerical analysis); lateral buckling of beams; buckling of rigid frames, flat plates, stiffened flat plates, and shells; the pony truss; buckling of arches.

ENGINEERING SCIENCE

The following courses serve as foundations for specialization, since they are concerned with a body of knowledge applicable in a variety of engineering fields.

SECOND GROUP

154 *Automatic Control** (4) Crafton, Depian

Spring—morning and evening.

Theory of automatic control systems including electromechanical, pneumatic, and hydraulic systems. Transient analysis, transfer functions, stability criteria. Experimental study of automatic control systems. Prerequisites: Electrical Engineering 127 or Mechanical Engineering 123.

THIRD GROUP

201 *Automatic Control* (3) Crafton

Fall—evening.

Advanced theory of measurement and control systems including: characteristic equations, transfer functions, system analysis, dynamic analogies, multiple-loop systems, and nonlinearities.

203 *Operational Analysis of Linear Systems* (3)

Fall—morning.

Transient analysis of linear, lumped-parameter electrical and mechanical systems by operational methods with emphasis on Laplace transforms.

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* An undergraduate course which may be taken for graduate credit with the approval of the Committee on Graduate Studies.

211 *Analysis of Engineering Systems I* (3) Depian, Liverman

Fall—evening; spring—evening

Application of mathematical principles to physical systems in civil, electrical, and mechanical engineering. Mathematical methods are emphasized. Mathematical topics include: ordinary differential equations, partial differential equations, vectors, coordinate systems, orthogonal functions.

212 *Analysis of Engineering Systems II* (3) Liverman

Spring—evening.

Continuation of Engineering Science **211**. Mathematical topics include: numerical solutions of differential equations, functions of complex variables, Laplace transforms, matrices.

217 *Analytical Mechanics* (3) ————

Fall—evening.

Fundamental principles, generalized coordinates, variational principles and Lagrange's equations, nonholonomic systems, Hamilton's equations, theory of small oscillations.

220 *Nonlinear Mechanics* (3) Crafton

Spring—evening.

Topological and analytical methods in nonlinear mechanics, nonlinear resonance, relaxation oscillations.

221 *Theory of Elasticity* (3) Hechtman

Spring—evening.

Stress and strain at a point; differential equations of equilibrium, boundary conditions, compatibility equations, and stress functions; two-dimensional problems in rectangular and curvilinear coordinates; strain energy methods; elementary three-dimensional problems; torsion and bending of prismatic bars; thermal stress.

231 *Fluid Dynamics* (3) The Staff

Spring—evening.

Theory of compressible and incompressible fluid motion including: potential motion, circulation and vorticity, mathematical treatment of flow at sub-, trans-, and supersonic velocities, normal and oblique shock, and elements of heat transfer.

CLASSICAL LANGUAGES AND LITERATURES

John Francis Latimer, Ph.D., *Professor of Classical Languages and Literatures, Executive Officer*

The Department of Classical Languages and Literatures offers two types of courses: (1) the course on *Greek and Roman Backgrounds in Literature*, which illustrates the literary, linguistic, and cultural backgrounds of Western Civilization, and for which no knowledge of the ancient languages is required. This course is designed to supplement and strengthen the broad general backgrounds of students who plan to concentrate in the fields of English or other literatures, History, Art, Drama, or Philosophy, or of those who wish to increase their general knowledge and appreciation of the bases of the great humanistic traditions as part of a well-rounded education. (2) Two years of Latin and two years of Greek are offered. These courses may be elected in fulfillment of the language requirements of the Junior College as set forth on page 67.

COURSE IN ENGLISH TRANSLATION

71–72 *Greek and Roman Backgrounds in Literature* (3–3)

Latimer

Not offered 1958–59.

Selected Greek and Roman masterpieces and their literary influence.

LANGUAGE COURSES

1–2 *First-year Latin* (3–3)

Latimer

A year course: credit is not given for the first half until the second half is completed.
1959–60 and alternate years.

Functional presentation of the essentials of the language, with appropriate reading selections. Development of English derivatives, and introduction to Roman life and literature.

3–4 *Second-year Latin* (3–3)

Latimer

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

A continuation of the preceding course, but with increased emphasis on reading Latin selections which illustrate Roman life and literature. Continuation of vocabulary building in English. Prerequisite: Classical Languages 1–2 or two years of high school Latin.

11–12 *First-year Greek* (3–3) Latimer

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

Essentials of grammar. Appropriate reading selections.

13–14 *Second-year Greek* (3–3) Latimer

A year course: credit is not given for the first half until the second half is completed.
1959–60 and alternate years.

Review of grammar. Emphasis on rapid reading from selected Greek authors.

RELATED COURSES IN ANOTHER DEPARTMENT

Art 101 *Ancient Art* (3)

Art 102 *Medieval Art* (3)

DERMATOLOGY AND SYPHILOLOGY

Harry Ford Anderson, M.D., *Professor of Dermatology and Syphilology, Executive Officer*

George William Creswell, A.B., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

Hayden Kirby-Smith, B.S., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

James Quincy Gant, Jr., M.S., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

Wendell Melvin Willett, A.B., M.D., *Associate in Dermatology and Syphilology*

Reuben Goodman, M.D., *Associate in Dermatology and Syphilology*

Crawford Southwell Brown, A.B., M.D., *Clinical Instructor in Dermatology and Syphilology*

213 *Dermatology and Syphilology* The Staff

Fall—1 hour a week.

Lectures on diseases of the skin and syphilis.

317–18 *Clinic* The Staff

Two weeks in rotation as arranged during academic year.

Case demonstrations, diagnosis, and treatment of skin diseases and syphilis. D. C. General Hospital.

407–8 *Clinic* The Staff

Two hours a week as arranged in rotation during academic year.

Dermatology and syphilology in infants and children. Children's Hospital.

409–10 *Clinic* The Staff

Two hours a week as arranged in rotation during academic year .

Clinical demonstrations, diseases of the skin. University Hospital.

ECONOMICS

Arthur Edward Burns, Ph.D., *Professor of Economics*
*Donald Stevenson Watson, Ph.D., *Professor of Economics, Executive Officer*
Thomas Willard Holland, LL.B., Ph.D., *Professor of Labor Economics*
Gerhard Colm, Dr. rer. pol., *Professorial Lecturer in Economics*
Ralph Aubrey Young, Ph.D., *Professorial Lecturer in Economics*
George Wythe, Ph.D., *Professorial Lecturer in Economics*
Hans Heymann, Jr., M.I.A., *Professorial Lecturer in Economics*
†Edward Campion Acheson, Ph.D., *Associate Professor of Finance*
John Whitefield Kendrick, Ph.D., *Associate Professor of Economics*
Wilson Emerson Schmidt, Ph.D., *Associate Professor of Economics*
John William Skinner, Ph.D., *Assistant Professor of Economics*

Bachelor of Arts with a major in Economics (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, including Economics 1–2 and Statistics 51, see page 68.

Required: the general requirements of Columbian College as stated on pages 82–88 and (1) Economics 101–2 and 121 and fifteen additional hours in second-group courses to be selected with the approval of the adviser; (2) Economics 198 which may be taken upon the completion of twenty-one of the required hours in the major; (3) Statistics 111, 112; (4) nine semester hours of other second-group courses selected from the following departments—Accounting, Business and Public Administration, History, Philosophy, Political Science, Sociology, and Statistics.

Bachelor of Arts with a major in Latin American Civilization (Columbian College—Field-of-Study).—See the Department of History.

Master of Arts in the field of Economics (Columbian College).—Prerequisite: the degree of Bachelor of Arts with a major in Economics at this University, or the equivalent.

Required: the general requirements of Columbian College as stated on pages 89–92. The thirty hours of required work must include (1) Economics 210 and nine semester hours in courses numbered 201–208, 213, 214, 251; (2) six semester hours in two of the following fields: public finance, monetary and fiscal policy (Economics 223-24, 261–62); labor economics (Economics 241, 244); economic policy (Economics 265, 266); international relations (Economics 281–82, 290); and (3) thesis (Economics 299–300).

Doctor of Philosophy (Graduate Council).—See page 97.

Bachelor of Arts in Government with courses in Economics (School of Government).—See pages 186–89.

Master of Arts in Government with a major in Economic Policy (School of Government).—Prerequisite: the degree of Bachelor of Arts with a major in Economics at this University, or the equivalent.

Required: the general requirements for the degree are stated on pages 193–94, 195. The thirty hours of required work must include Economics 210, 265, 266, and the thesis, Economics 299–300.

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* On sabbatical leave spring semester 1958–59.
† On leave of absence 1958–59.

For information concerning other Master of Arts curricula in the School of Government with courses in Economics, see pages 193–95.

First Group

1–2 *Principles of Economics* * (3–3) Kendrick, Skinner, and Staff

Lecture (2 hours), recitation (1 hour). *First half:* fall—morning and evening; spring—evening; summer 1958. *Second half:* fall—evening; spring—morning and evening; summer 1958.

Survey of the major economic principles, institutions, and problems in contemporary life. Economics 1 is prerequisite to Economics 2.

Second Group

101–2 *Economic Analysis* (3–3) The Staff

First half: fall—morning; spring—evening; summer 1958. *Second half:* spring—morning and evening.

Analysis of demand, supply, and commodity pricing; theory of national income determination, pricing of productive services; welfare economics. Economics 101 is prerequisite to Economics 102.

104 *History of Economic Thought* (3) Burns

Not offered 1958–59.

History of the major schools of economic thought; influence of changing problems on the development of economic theory.

105 *Business Cycles* (3) Kendrick

Fall—morning.

Analysis of strategic factors in economic instability, survey of recent business cycle theories.

121 *Money and Banking* (3) Acheson

Fall—morning and evening; spring—evening; summer 1958.

Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems.

123 *Monetary Theory and Policy* (3) Acheson

1959–60 and alternate years.

Principal contemporary theories, background of recent monetary policy.

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* Economics 1–2 is prerequisite to all other courses in Economics.

124 *Financial Institutions and Economic Development* (3) Acheson

1958–59 and alternate years: fall—morning.

Evolution and growth of the money-mechanism in United States economy, changing relationships of money markets to role of investment, special emphasis on monetary framework for national economic development.

126 *Foreign Exchange and International Finance* (3) Acheson

Spring—morning.

The theory and practice of the foreign exchanges: current methods of international transfer.

133 *The Economy of the Soviet Union* (3)

Not offered 1958–59.

Development and main features of the economic life of the Soviet Union (See History 146, 246, and Geography 196).

141 *Industrial Relations* (3) Holland

Fall—morning.

Development and practice of collective bargaining in American industry. Public control of industrial relations.

142 *Labor Economics* (3) Holland

Spring—morning.

Wages, hours, and employment; standards of living; public policy.

161–62 *Public Finance and Taxation* (3–3) Schmidt

1958–59 and alternate years: academic year—evening; 1959–60 and alternate years: academic year—morning.

General survey of government expenditures; sources and methods of taxation; economic effects of expenditures, taxes, and of government debt policies.

165 *Government Control of Economic Activity* (3) Watson

Fall—evening.

Changing role of government in promoting and regulating economic activity, types and spheres of control.

166 *Comparative Systems of Economic Reform* (3) Watson

Not offered 1958–59.

Critical analysis of the major theories of economic and social reform with special attention to their origins and backgrounds.

181–82 *International Economics* (3–3) Schmidt

Academic year—afternoon and evening; summer 1958—Economics 181 (3).

Survey of world economics, theories of international trade, analysis of international economic problems, and the international organizations.

183–84 *International Economic Policy* (3–3) Acheson

Not offered 1958–59.

Historical and theoretical analysis of tariffs, exchange rates, exchange and trade control, discrimination, and capital movements; policies related thereto.

185–86 *Economic History and Problems of Latin America* (3–3) Wythe

Academic year—evening.

Evolution of the economies of Latin America with particular emphasis on present structures and problems, considered in the regional, country, and sub-region contexts. Economics 185, special attention to Middle America; Economics 186, special attention to South America.

198 *Readings and Research* (3) Skinner

Fall—evening; spring—evening.

Comprehensive survey of economics. Open only to students whose major is economics and who have completed twenty-one hours of course work in economics.

THIRD GROUP

201–2 *History and Literature of Economic Thought* (3–3) Burns

Academic year—evening.

Critical analysis and interpretation of the development and the literature of economic thought, origins, and problems, of the major types of theory, and their relation to present problems and policies.

203–4 *Contemporary Economic Theory* (3–3) Watson

Academic year—evening.

The contributions of Marshall, Chamberlin, Robinson, Hicks, and others.

205 *Theory of Employment and Income* (3) Kendrick

Fall—evening.

Determinants of the level of employment and income, Keynesian and classical systems contrasted, and recent literature on the subject.

206 *Business Cycle Theory* (3) Kendrick

Spring—evening.

The general characteristics of business cycle theories and discussion of particular theories.

208 *The National Income* (3) Kendrick

Spring—as arranged.

The theory of economic aggregates, measurement and policy aspects of national income.

210 *Seminar in Economics* (3) Burns

Spring—evening.

Integration of economic theories; methods of research. Open only to students who have completed fifteen hours of graduate work in economics.

211 *Readings in Advanced Economics* (3) Burns and Staff

Fall—as arranged.

Integration and coordination of advanced economic theories.

213 *Economic Thought in the Twentieth Century* (3) Burns

Not offered 1958–59.

Continuation of Economics 201–2. The principal trends in economic thought during the present century.

214 *Quantitative Economics* (3)

Not offered 1958–59.

Social accounting: forms and uses; budget and income accounts; money-flows and input-output analysis; aggregative econometric models; programming, single-equation estimating techniques; analysis of changing composition of economic aggregates.

219 *Managerial Economics* (3) Watson

Summer 1958.

Analysis of price, production, and inventory policies of business firms.

223–24 *Monetary Policy and Central Banking* (3–3) Young

Academic year—evening.

The money system in its relation to national income, monetary policies of the Federal Reserve and other central banking systems.

241 *Labor Economics* (3)

Holland

Fall—evening.

Implications of industrialism for labor, questions of social policy, contributions of economics to solutions of labor problems.

244 *Collective Bargaining* (3)

Holland

Spring—evening.

The collective bargaining contract and the elements comprising it, analysis of the policies of labor and of management.

251 *Theories of Economic Development* (3)

Shenefield

Summer 1958.

Growth and change in economic activity, capital accumulation, innovations in technology and business organization.

253 *Productivity Analysis* (3)

Kendrick

Summer 1958.

Concepts and measures of productivity; relations to economic growth and to structural changes in the American economy.

261–62 *Public Finance and Fiscal Policy* (3–3)

Colm

Academic year—evening.

Survey of the major contributions to the theory and doctrines of public finance. Special problems: budget problems; current tax problems; and federal, state, and local relationships.

265 *Theory of Economic Policy* (3)

Watson

Fall—evening.

The nature, forms, methods, and objectives of economic policy; the relation of economic theory to economic policy.

266 *Problems of Governmental Economic Policy* (3)

Watson

Spring—evening.

The execution of economic policies as they are affected by the processes of government.

267 *Economic Organization of the Communist Orbit* (3)

Heymann

Fall—evening.

Development of the Soviet-type economy; organization under the Soviets; policies and problems: monetary, fiscal, production, allocative, foreign trade, economic growth. (See also History 146, 246, and Geography 196.)

281–82 *International Economics* (3–3) Schmidt

Academic year—evening.

The modern theories of international economics, the variables determining the balance of payments, techniques to obtain balance-of-payments equilibrium.

284 *United States Foreign Economic Policy* (3) Schmidt

Not offered 1958–59.

Analysis of foreign aid program; international, commercial, and monetary policy of the United States; United States and international economic organization.

285–86 *Economic Development of Latin America* (3–3) Wythe

Academic year—evening.

Current policies and programs, capital formation, public and private; foreign loans and investment; social and technological preconditions of investment.

287–88 *Latin America: Trade and Commodity Policy* (3–3) Wythe

Not offered 1958–59.

Tariffs and exchange control systems, bilateral and general commercial agreements, terms of trade.

290 *Problems in International Financial Policy* (3) Acheson

Spring—evening.

International financial problems in recent decades and analysis of external economic problems of several countries.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1958.

COURSE OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above, the University offers the following course for students enrolled in the Navy Graduate Comptrollership Program and the Air Force Advanced Management Program.

195 *Governmental and Industrial Economics* (3)

EDUCATION

James Harold Fox, A.M., Ed.D., *Professor of Education*
Burnice Herman Jarman, A.M., Ed.D., *Professor of Education*
Blake Smith Root, A.M., Ed.D., *Professor of Education, Executive Officer*
Ralph Windsor Ruffner, A.M., Ed.D., *Professor of Education*
Anthony Charles LaBue, B.S., Ed.D., *Professor of Education*
Ray LaForest Hamon, Ph.D., *Professorial Lecturer in Education*
Charles Edward Bish, A.M., Ed.D., *Professorial Lecturer in Education*
John Frederick Brougher, A.M., Ed.D., *Professorial Lecturer in Education*
Madaline Kinter Remmlein, Ph.D., J.D., *Professorial Lecturer in Education*
Joseph Bueol Johnson, A.M., Ed.D., *Professorial Lecturer in Education*
Florence Mary Lumsden, A.M., Ed.D., *Professorial Lecturer in Education*
Howard Odin Johnson, A.M., Ed.D., *Professorial Lecturer in Education*
Grover LaMarr Angel, A.M., Ed.D., *Associate Professor of Education*
John Carl Lang, A.M., Ed.D., *Associate Professorial Lecturer in Education*
LuVerne Crabtree Walker, A.M., *Associate Professorial Lecturer in Education*
Raymond Ray Reed, A.M., *Associate Professorial Lecturer in Education*
Eugenia Campbell Nowlin, A.M., *Associate Professorial Lecturer in Education*
Mary Ellen Coleman, A.M., *Assistant Professor of Education*
Carol Ruth St. Cyr, Ph.D., *Assistant Professor of Education*
William Andrew McCauley, Ph.D., *Assistant Professor of Education*
Harry Grubb Detwiler, A.M., *Assistant Professor of Education*
Levin Bartow Hanigan, B.S., Ed.D., *Lecturer in Education*
John Giancaspro, A.M., *Lecturer in Education*

Consultant in Research

Wesley Earl Armstrong, A.B., Ed.D., *Director, National Council for Accreditation of Teacher Education*

Field Studies

Robert Whittington Eller, A.M., *Director of Field Studies*

Field Service Coordinators

Alexander Anderson, A.M., *Assistant Principal, Washington-Lee High School, Arlington, Va.*
Mary Foust Maré, A.M., *Assistant Principal and Dean of Girls, Wakefield High School, Arlington, Virginia*
Claude Manby Richmond, B.S., A.M., *Principal, Stratford Junior High School, Arlington, Virginia*

Bachelor of Arts in Education (School of Education).—Prerequisite: the Education curriculum in the Junior College or the equivalent, or a certificate of graduation from an approved normal school or the equivalent, see page 70.

Required: the satisfactory completion of a program of at least sixty-six semester hours in addition to the general education background courses in the Junior College curriculum. Each program is planned individually to meet the certification requirements of the student, see pages 162–71.

Master of Arts in Education (School of Education).—Prerequisite: a Bachelor's degree from an accredited institution. Programs are planned individually. The following areas of specialization are available: (1) school administration—secondary school principalship, or elementary school principalship; (2) adult education; (3) secondary education; (4) elementary education; (5) curriculum; (6) employee training; (7) guidance; (8) reading. See pages 175–77.

Advanced Professional Certificate (School of Education).—See pages 177–79.

Doctor of Education (School of Education).—See pages 179–80.

A *Reading Clinic* Coleman and Staff

Diagnosis of reading difficulties; individual or group lessons without academic credit. Fee: for diagnosis, $30; for individual lesson, $4; for group lesson, $2.50; material fee, $4.

SECOND GROUP

109–10 *Learning and Teaching* (3–3) McCauley

Lecture (2 hours), conference (1 hour), field work (2 hours) as arranged.

First half: fall—afternoon and evening; summer 1958. *Second half:* fall—afternoon; spring—afternoon and evening; summer 1958.

For the general student as well as the prospective teacher. *First half:* nature of learning approached through the study of classroom situations. *Second half:* nature of teaching approached through observation of classroom situations.

111 *Methods in Elementary Education* (6) LaBue

Fall—all day Tuesday and Thursday.

For seniors in the elementary school curriculum. An integrated methods course dealing with the learning experiences designed to meet the developmental needs of children in the social sciences, the language arts, and concepts of number. Also includes the study of general classroom procedures and the evaluation of pupil progress. To be taken concurrently with Education 133. Prerequisite: Education 109–10 and 121–22.

Nowlin

113 *Elementary School Art* (3)

Fall and spring: lecture and laboratory (3 hours)—evening, field work—as arranged.

For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 29. Material fee, $4.50.

Reed

114 *Elementary School Music* (3)

Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1958.

For undergraduates in the elementary school curriculum. Materials and methods. Prerequisite: Psychology 1 and 29.

Hanigan

115 *Teaching of Reading in the Elementary School* (3)

Fall: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1958.

A basic course in methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 109–10 and 121–22 or teaching experience.

St. Cyr

116 *Elementary School Social Studies* (3)

Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1958.

For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 109–10 and 121–22 or teaching experience.

St. Cyr

117 *Elementary School Science* (3)

Fall: lecture (2 hours)—evening, field work (2 hours)—as arranged; summer 1958.

For undergraduates in the elementary school curriculum. Content, methods, materials, and activities. Prerequisite: Education 109–10 and 121–22 or teaching experience.

St. Cyr

120 *Elementary School Arithmetic* (3)

Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.

For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 109–10 and 121–22 or teaching experience.

St. Cyr

121–22 *Society and the School* (3–3)

Lecture (2 hours), conference (1 hour), field work (2 hours as arranged).

First half: fall—afternoon and evening; summer 1958. *Second half:* fall—afternoon; spring—afternoon and evening; summer 1958.

For the general student as well as the prospective teacher. *First half:* the historical and sociological development of education at local, national, and international levels; cooperation of the school with other community agencies. *Second half:* organization and operation of schools; principles and functions; role of the teacher.

128 *Children's Literature* (3) Walker

Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.

For undergraduates in the elementary school curriculum. Exploring and evaluating the newer books for children and the children's classics, understanding the contribution of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 29.

131 *Common Teaching Skills* (3) Detwiler

Fall—early afternoon; spring—late afternoon.

For seniors in the secondary school curriculum. Course, unit, and lesson planning; practical techniques used in connection with motivation, the assignment, group procedures, directing study, individual differences, evaluation, clerical routines, disciplines, the homeroom, activity sponsorship, public relations. Prerequisite: Education 109–10 and 121–22.

133–34 *Observation and Student Teaching* (3–3 to 6) Detwiler, McCauley, LaBue

A year course: credit is not given for the first half until the second half is completed.

133A and 133B: fall—as arranged; 133C: spring—as arranged.
134A, 134B, and 134C: spring—as arranged.

For seniors in the elementary or secondary school curriculum. Section A is a year course for students in the elementary school curriculum. Section B is a year course for students in the secondary school curriculum. Section C is for students enrolled in the intensive program. Education 134 student-teaching fee $50. Admission by permission of the instructor. Prerequisite: Education 109–10 and 121–22.

SPECIAL METHODS COURSES*

To be elected in the senior year after substantial preparation in the teaching fields concerned by the students in the secondary school curriculum. Course requirements and hours of credit vary with license requirements. Practices of successful teachers are studied and actual teaching content as found in current texts and courses of study is reviewed.

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* Prerequisite to all special methods courses: Education 109–10, 121–22, and 131. Additional prerequisites are stated under each course.

Lumsden

136 *Teaching English* (2 to 4)

Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged:

Prerequisite*: eighteen semester hours in English.

Root

138 *Teaching Social Studies* (2 to 4)

Spring: lecture (2 hours)—evening, field work (2 hours)—as arranged.

Prerequisite*: twenty-four semester hours of social studies.

140 *Teaching Mathematics* (3)

Spring—late afternoon.

Prerequisite*: Mathematics through calculus.

144 *Teaching Science* (2 to 4)

Spring: lecture (2 hours)—late afternoon, field work (2 hours)—as arranged.

Prerequisite*: twenty-four to forty semester hours of science.

McSpadden

146 *Teaching Foreign Languages* (2 to 4)

Spring—late afternoon.

Prerequisite*: eighteen semester hours of one foreign language.

Kirkpatrick

148 *Teaching Home Economics* (2)

Spring—as arranged.

Prerequisite*: thirty semester hours of Home Economics.

Shott

150 *Teaching Business Subjects* (2)

Spring—as arranged.

Prerequisite*: thirty semester hours of business education.

THIRD GROUP†

Ruffner

201–2 *Learning and Teaching* (3–3)

Lecture (2 hours), conference (1 hour), field work (2 hours)—as arranged.
First half: fall—evening. *Second half:* spring—evening.

For graduate students. *First half:* nature of learning approached through the study of classroom situations. *Second half:* nature of teaching approached through observation of classroom situations.

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* Prerequisite to all special methods courses: Education 109–10, 121–22, and 131. Additional prerequisites are stated under each course.

† A degree from an accredited institution is prerequisite to all third-group courses.

203–4 *Comparative Education* (3–3) Ruffner

Academic year—evening.

Comparison of foreign educational systems with those of the United States; particularly those of Russia, West Germany, Denmark, Switzerland, France, the British Isles, Canada, and Australia.

205–6 *The Curriculum* * (3–3) Bish

Academic year—Saturday morning.

For experienced teachers. *First half:* curriculum foundations and issues; comparison of curriculum patterns. *Second half:* principles and procedures in curriculum development; group consideration of student problems.

207 *Curriculum Materials* * (3) Bish

Summer 1958.

For experienced teachers. Construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to students' own situations.

209 *Child Growth and Development* (3) McCauley

Fall—Saturday morning; summer 1958.

An interdisciplinary approach to child development taking into account such factors as society and culture, socialization, and socializing agents with particular emphasis on the home and school.

210 *Adolescent Growth and Development* (3) McCauley

Spring—Saturday morning.

A consideration of physical, intellectual, and cultural backgrounds of adolescence with particular emphasis on social development, adjustment to organized society, educational development and adjustment to school, and home relationships.

211 *Evaluation in Education* * (3) Ruffner

Fall—evening; summer 1958 (as Education 212).

Concept of evaluation, relationship between evaluation of ends and means, steps involved in the evaluation of learning outcomes. As the course progresses each student develops solutions for evaluation problems related to his work situation.

212 *Educational Measurement* (3) McCauley

Spring—evening.

Basic measurement techniques; construction, selection, administration, and interpretation of objective and essay-type examinations; statistical analysis of test results; laboratory experiences in the use of test instruments.

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* Prerequisite: adequate professional preparation.

213–14 *History of Education* (3–3)

Jarman

Academic year—evening.

First half: the European backgrounds of American education. *Second half:* the evolution of the American school system.

215 *Education of Exceptional Children* * (3)

LaBue

Fall—evening; summer 1958.

For classroom teachers. A survey of current problems in the education and guidance of exceptional pupils. Nature and needs of those physically, mentally, or emotionally handicapped; needs of the gifted. Resources for help in correction, diagnosis, therapy, education, and guidance.

216 *Education of Slow-learning Children* * (3)

LaBue

Not offered 1958–59.

Identification, nature, and needs of slow-learning elementary and junior high school children. Emphasis on diagnosis and treatment of learning difficulties.

217–18 *Contemporary Problems in Education* * (3–3)

Jarman

Academic year—evening; summer 1958—Education 218 (3).

First half: designed to help students formulate a personal philosophy of education. *Second half:* social foundations of education—a study of the forces that shape the policies and offerings of the school.

219 *Elementary School Classroom Procedures* * (3)

LaBue

Summer 1958.

Current classroom practices with particular emphasis on ways of planning, unit teaching, techniques in discipline; individual and group evaluation techniques, resources for learning, providing for individual differences.

221 *Early Childhood Education* * (3)

Not offered 1958–59.

For experienced teachers. Emphasis on methods, materials, and learning experiences designed to meet the developmental needs of kindergarten and primary-grade children.

223–24 *Reading Problems* * (3–3)

Coleman

Academic year—evening.

For experienced teachers. Study of reading difficulties on elementary and secondary school levels; application of clinical procedures and techniques in solving classroom problems.

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* Prerequisite: adequate professional preparation.

225 *Elementary School Reading* (3) Coleman

Summer 1958.

Developmental and remedial approaches to reading problems. Demonstrations of diagnostic and corrective techniques used in the Reading Clinic.

227 *Basic Issues in Elementary Education* (3) LaBue

Fall—evening.

A consideration of basic issues in the purposes, organization, and conduct of elmentary education. Emphasis on the philosophical and psychological roots of fundamental assumptions as they relate to classroom practices.

228 *Instructional Areas in Elementary Education* (3) LaBue

Spring—evening.

Critical appraisal of the objectives, organization, content, and teaching methods in the language arts, arithmetic, social studies, science, arts and crafts, health and physical education.

229 *Administration of Elementary Education* (3) LaBue

Spring—evening; summer 1958.

For experienced teachers and administrators. Administration as a means of achieving instructional objectives, organizing learning and teaching activities, handling supplies and equipment, maintaining the building, and integrating school and community life. Emphasis upon guide lines to action.

231 *Secondary School Classroom Procedures* * (3) Giancaspro

Fall—evening; summer 1958.

Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc; review of recent literature.

233 *Audio-visual Education* * (3) J. Johnson

Spring: lecture (2 hours), laboratory (1 hour)—evening.

Role of audio-visual materials in learning; selection, evaluation, and use of materials; administrative problems in the care, operation, maintenance, and use of audio-visual materials and equipment. Material fee, $7.

239 *Teaching the Core Curriculum* * (3) St. Cyr

Fall—evening.

An examination and study of classroom teaching procedures appropriate to the core program.

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* Prerequisite: adequate professional preparation.

241 *Education of the Gifted* * (3)

Not offered 1958–59.

For classroom teachers. Nature and discovery of giftedness; provisions for the gifted in regular classes; experimental projects.

243 *Human Relations in the Classroom* * (3)

Summer 1958.

Principles and practices involved in interpersonal relationships between learner and teacher and among learners.

Angel

245 *School and Community* * (3)

Spring—evening.

The school as an important member of a team of social agencies that builds the community.

Detwiler

251 *Guidance in Secondary Schools* * (3)

Fall—evening; summer 1958.

Scope; needs; organization of the program; services to students, the instructional staff, and the administration; personnel needed for the program.

Bish, Root

254 *The Junior High School* * (3)

Not offered 1958–59.

Purposes, organization, core programs, guidance, developing course of study, extra-classroom activities.

Root

255–56 *Secondary Education* *(3–3)

Academic year—Saturday morning; summer 1958.

First half: current proposals for the improvement of secondary education. *Second half:* current problems in each of the subject-matter fields.

H. Johnson

259–60 *Secondary School Management* * (3–3)

Academic year—Saturday morning.

For experienced teachers and administrators with two years of successful teaching in secondary schools. Management planning, execution, and control; criteria of good management; construction of the master schedule; leadership problems incident to the development of new policies and programs.

Root

263–64 *Employee Training* (3–3)

Academic year—evening.

First half: nature and purpose, review of major programs—orientation, supervisory, apprentice, clerical, skills, communication. *Second*

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* Prerequisite: adequate professional preparation.

half: administrative problems and practices, training media, coordination with other management functions. Prerequisite: adequate professional preparation or two years of experience in employee training.

265–66 *Teaching Secondary School English* (3–3)

Not offered 1958–59.

A refresher course for teachers of English. Discussion of new approaches to high school content. Offered in cooperation with the departments of English and Speech. *First half:* communication skills—structural linguistics, composition, and speech. *Second half:* American and English literature.

267–68 *Teaching Secondary School Social Studies* (3–3) ————

Academic year—evening.

A refresher course for teachers of the Social Studies. Discussion of new approaches to high school content. Offered in cooperation with the departments of History, Political Science, Geography, Economics, and Sociology.

270 *Art Education* (3) Nowlin

Not offered 1958–59.

For experienced teachers. Basic philosophies of contemporary teachers of art; use of visual and tactile media; emphasis upon visual aids, displays and use of community resources. Designed to increase awareness of the creative process. Prerequisite: Education 113. Material fee, $4.50.

271 *The Teacher and School Administration* * (3) Fox

Fall—evening; summer 1958.

A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions.

272 *The Teacher and School Supervision* * (3) Fox

Spring—evening.

Nature, organization, human relationships, and techniques.

273–74 *Teacher Education* * (3–3)

Not offered 1958–59.

First half: aims, objectives, and basic issues; study of outstanding and experimental programs. *Second half:* recruitment and selection, general education, teaching-field preparation, professional sequences, laboratory experiences.

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* Prerequisite: adequate professional preparation.

Hutchins

275 *School Finance* * (3)

Summer 1958.

Educational financial theory, practice, and control, including methods of financing.

Root

276 *Seminar: Public Relations in School Administration* * (3)

Not offered 1958–59.

Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy making.

Remmlein

278 *School Law* * (3)

Not offered 1958–59.

Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group.

Ruffner

279–80 *Adult Education* * (3–3)

Academic year—evening; summer 1958—Education 280 (3).

First half: current concepts and objectives, agencies involved, programs on all levels—international through community. *Second half:* the adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs.

Ruffner

281 *Group Procedures in Education* * (3)

Spring—evening; summer 1958.

Theory, practice, evaluation, and application to all educational levels.

Root

285 *Extra-classroom Activities* * (3)

Fall—evening; summer 1958.

Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contest; particular attention to sponsorship, participation, finance, and evaluation.

Coleman

287–88 *Clinical Study of Reading Problems* * (3–3)

Academic year—Saturday morning.

For advanced students. Diagnostic and corrective work under supervision in the Reading Clinic. Each student is expected to diagnose and treat pupils who are retarded in reading. Case studies are presented and criticized. Prerequisite: Education 223–24 or the equivalent. Material fee, $5 a semester.

Coleman

289–90 *Supervisory Problems in Reading* * (3–3)

Not offered 1958–59.

For experienced teachers, principals, supervisors, and superintendents. Considers the problems involved in planning, reorganizing, and improving the total reading program, in promoting cooperative effort on the part of the staff toward increasing teaching efficiency.

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* Prerequisite: adequate professional preparation.

291 *Planning the School Plant* (3) Hamon

Not offered 1958-59.

Selection of sites; evaluation of existing buildings; utilization of present facilities; adaptation to curricular needs; building, operation, and maintenance problems.

293-94 *Research* (3-3) The Staff

Academic year—as arranged.

Individual research under the guidance of a member of the staff. Program and conferences arranged with an instructor.

295 *Educational Research Methods and Procedures* (3) Fox

Fall—late afternoon; spring—late afternoon; summer 1958.

Required of all Master of Arts candidates following Plan 2. Knowledge of elementary statistics required.

297 *Reading in Education* The Staff

Fall—late afternoon; spring—late afternoon; summer 1958.

To assist those preparing for the comprehensive examinations. No credit toward degree requirements. Tuition fee, $20.

299-300 *Thesis* (3-3) The Staff

Academic year—as arranged.

Required of all Master of Arts candidates following Plan 1.

ELECTRICAL ENGINEERING

Norman Bruce Ames, LL.B., E.E., M.S. in E.E., Dr. sc. techn., *Professor of Electrical Engineering*

Ernest Frank, B.E.E., M.S. in E.E., Ph.D., *Professor of Electrical Engineering, Executive Officer*

Forest Klaire Harris, Ph.D., *Professorial Lecturer in Electrical Engineering*

Thomas Phillip Liverman, Ph.D., *Professorial Lecturer in Electrical Engineering*

Robert Irving Sarbacher, Sc.D., E.E., *Professorial Lecturer in Electrical Engineering*

Louis Depian, Ph.D., *Associate Professor of Electrical Engineering*

Nelson Thomas Grisamore, Ph.D., *Associate Professor of Electrical Engineering*

Robert Steven Ledley, D.D.S., A.M., *Assistant Professor of Electrical Engineering*

Dwight Edward Shytle, *Lecturer in Electrical Engineering*

Kermit Milton Lovewell, B.S. in E.E., *Lecturer in Electrical Engineering*

George Abraham, M.S., *Lecturer in Electrical Engineering*

William Walter Balwanz, B.E.E., M.S. in E.E., *Lecturer in Electrical Engineering*

George Pida, B.E.E., *Lecturer in Electrical Engineering*

William Alderson, M.S. in E.E., *Lecturer in Electrical Engineering*

William Herbert Gossard, A.B., M.S. in E.E., *Lecturer in Electrical Engineering*

Joseph Elias Guidry, B.E., M.S. in E.E., *Lecturer in Electrical Engineering*

James Milton Headrick, M.S., *Lecturer in Electrical Engineering*

Peter Hans Sawitz, M.S. in E.E., *Lecturer in Electrical Engineering*

Louis Samuel Rotolo, B.S. in E.E., *Lecturer in Electrical Engineering*

Llewellyn Adam Rubin, B.S. in E.E., *Instructor in Electrical Engineering*

Neely Forsythe Jones Matthews, B.S.E., *Instructor in Electrical Engineering*

Derrill Conway Rohlfs, B.E.E., *Associate in Electrical Engineering*

Bachelor of Electrical Engineering (School of Engineering).—See pages 138-41 and 142 for statement of requirements.

Master of Science in Engineering (School of Engineering).—See pages 144-47 for statement of requirements.

First Group

11 *Electric Circuits* (3) Frank and Staff

Fall—morning and evening; spring—morning and evening.

Current, voltage, power, Kirchhoff's laws, steady-state mesh and node analysis, simple transients, matrices and determinants, network theorems, resonance, balanced polyphase circuits. Prerequisite: Physics 7. Prerequisite or concurrent registration: Mathematics 20.

12 *Electric Machinery* (3) Ames and Staff

Spring—morning and evening; summer 1958.

Principles of electromechanical energy conversion, methods of machine analysis, theory of transformers, d-c and a-c machines. Prerequisite: Electrical Engineering 11.

Second Group

102 *Engineering Electronics* (3) Depian and Staff

Spring—morning and evening.

Introductory treatment of: physical concepts of electron-tube and semi-conductor devices, their electrical characteristics, and their use in electronic circuit applications. Linear and nonlinear methods of analysis. Prerequisite: Electrical Engineering 11, Mathematics 20.

103 *Electric and Magnetic Fields* (3) Grisamore and Staff

Fall—morning and evening.

Introduction to vector analysis; basic concepts of electrostatics and magnetics. Analysis of resistance, capacitance, inductance, forces, magnetic circuits. Prerequisite: Electrical Engineering 12, Mathematics 103.

104 *Field Analysis* (3) Grisamore and Staff

Spring—morning and evening.

Solid angle, method of images, vector potential, magnetic scalar potential, conformal mapping, solutions of Laplace's equation, field plotting, analogues. Particle motion in electric and magnetic fields. Introduction to Maxwell's equations. Prerequisite: Electrical Engineering 103. Prerequisite or concurrent registration: Mathematics 112.

107 *Steady-state Network Analysis* (3) Rubin, Matthews

Fall—morning and evening.

Four-terminal networks, network theorems, resonance, filters, coupled circuits, transmission lines, Fourier series, matrices. Prerequisite: Electrical Engineering 11, Mathematics 103.

111 *Electrical Measurements* (2) Harris

Fall—morning and evening.

Systems of units, theory of errors, d-c indicating instruments and galvanometer dynamics, precision measurement of voltage, current, and resistance. Prerequisite: Electrical Engineering 12, Mathematics 103.

112 *Electrical Measurements* (2) Harris

Spring—morning and evening.

Theory of a-c indicating instruments, a-c bridges, waveforms, frequency measurements, measurement of power and energy. Prerequisite: Electrical Engineering 107, 111.

113 *Electric Power Laboratory* (2) Ames and Staff

Fall—afternoon and evening.

Experiments in d-c circuits, instruments, and machines. Prerequisite: Electrical Engineering 12. Laboratory fee, $11.

114 *Electric Power Laboratory* (2) Ames and Staff

Spring—morning and evening.

Experiments in a-c circuits, instruments, and machines. Prerequisite: Electrical Engineering 113. Laboratory fee, $11.

118 *Alternating-current Machinery* (3) The Staff

Spring—morning and evening.

Extended theory of transformers and a-c machines including single-phase and control-type machines; machine transients and dynamics. Prerequisite: Electrical Engineering 12, 103, and 107.

122 *Measurements and Electronics Laboratory* (2) Rubin and Staff

Spring—afternoon and evening.

Experiments with d-c measuring instruments, oscilloscopes, and impedance bridges; characteristics of electronic devices and simple amplifiers. Prerequisite: Electrical Engineering 111. Prerequisite or concurrent registration: Electrical Engineering 102, 112. Laboratory fee, $11.

123 *Communications and Electronics Laboratory* (2) Rubin and Staff

Fall—afternoon and evening.

Theory and use of electronic devices and instruments. Experiments in networks, passive and active circuits, modulation, and detection. Prerequisite: Electrical Engineering 107, 112. Prerequisite or concurrent registration: Electrical Engineering 137. Laboratory fee, $11.

124 *Communications and High-frequency Laboratory* (2) Rubin and Staff

Spring—afternoon and evening.

Experiments at radio frequencies: impedance, amplifiers, lines, antennas. Experiments at microwave frequencies: waveguides, horns, slotted-line measurements of standing waves, and power. Prerequisite: Electrical Engineering 123. Prerequisite or concurrent registration: Electrical Engineering 136. Laboratory fee, $11.

127 *General Network Analysis* (3) Matthews

Fall—morning and evening.

Solutions of linear integro-differential equations using transformation calculus. Laplace transforms, Fourier integral, poles and zeros of network functions, correlation of time and frequency domains, one-terminal- and two-terminal-pair networks. Prerequisite: Electrical Engineering 107, Mathematics 112.

131 *Electric Power Systems* (3) Ames and Staff

Fall—evening.

Theoretical analysis of power transmission including parameters, system stability and protection, with application of symmetrical-component theory. Prerequisite: Electrical Engineering 118.

136 *Electromagnetic Waves* (3) Frank and Staff

Spring—morning and evening.

Electromagnetic waves in bounded media, radiation from antennas, high-frequency transmission lines, cavity resonators and microwave devices. Prerequisite: Electrical Engineering 104, Mathematics 112.

137 *Electronic Circuits and Systems* (3) Depian and Staff

Fall—morning and evening.

Analysis of linear amplifiers, concepts of feedback and oscillators, amplitude and frequency modulation and detection, communication systems. Prerequisite: Electrical Engineering 102 or Physics 132, Electrical Engineering 107, Mathematics 112.

171 *Digital Circuitry and Systems* (3) Ledley

Fall—late afternoon.

Introduction to basic concepts of modern digital programmed systems, mathematical foundations and techniques for logical design of digital circuits, electronic design of computer circuits. Prerequisite: Mathematics 112, Electrical Engineering 102 or Physics 132.

172 *Digital Techniques* (3) Ledley

Spring—late afternoon.

Continuation of Electrical Engineering 171. Automatic programming techniques, information theory, self-detecting and correcting codes, advanced logical circuit design, electronic design of digital transistor and magnetic-core circuits, memory systems, analog-to-digital techniques, wiring diagrams. Prerequisite: Electrical Engineering 171.

174 *Digital Computer Laboratory* (2) Matthews

Spring—afternoon.

Theory and use of a digital computer: programming, operating, logical circuitry, design, troubleshooting. Prerequisite: Electrical Engineering 171. Laboratory fee, $11.

189–90 *Proseminar in Electrical Engineering* (1–1) Abraham

Academic year—late afternoon.

Oral and written presentation of technical and nontechnical papers by students, with group discussion and critical analysis. Prerequisite: senior status.

THIRD GROUP*

205 *Electronic Circuit Analysis* (3) Sawitz

Spring—evening.

Methods of linear and nonlinear analysis applied to passive and active networks including vacuum-tube and transistor circuits, and magnetic and dielectric amplifiers.

207 *Steady-state Network Analysis* (3) Brown

Spring—evening.

Analysis of lumped, linear networks: determinants, loop and node analysis, network theorems, four-terminal networks, filters, complex frequency, network functions, and general network properties.

209 *Electromagnetic Field Analysis* (3) Frank

Fall—evening.

Electrostatics, magnetics, and Maxwell's equations: solutions of Laplace's equation, retarded potentials, electromagnetic waves in bounded media, field analysis techniques.

211 *Physical Electronics* (3) Abraham

Fall—evening.

Thermionic emission, charged particle motion in electric and magnetic fields, physical analysis of diodes and triodes, space charge and potential distributions, electron optics, electronic principles of microwave tubes.

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* Prerequisites to graduate courses are not stated explicitly. Instructors in individual courses will state prerequisites and may recommend preparatory work to be completed prior to admission to the course.

215 *Analysis of Modulation and Noise* (3) Alderson

Spring—evening.

Analysis by Fourier series and integrals of signals and linear networks, modulation and spectra, noise analysis including probability method of determining power spectra.

231 *Basic Concepts of Digital Computers* (3) Ledley

Fall—evening.

Historical survey of computers; arithmetic systems, computer logic, basic components of digital computers; selected topics in cybernetics, information theory, and logic.

ENGLISH

Robert Whitney Bolwell, Ph.D., Litt.D., *Professor Emeritus of American Literature in Residence*

Ernest Sewall Shepard, A.M., *Professor of English Literature*
Fred Salisbury Tupper, Ph.D., *Professor of English Literature*
Calvin Darlington Linton, Ph.D., *Professor of English Literature*
Charles William Cole, Ph.D., *Professor of American Literature, Executive Officer*
Robert Hamilton Moore, Ph.D., *Professor of English Composition*
James Harold Coberly, Ph.D., *Professor of American Literature*
William Lewis Turner, Ph.D., *Associate Professor of English*
Muriel Hope McClanahan, Ph.D., *Associate Professor of English Composition*
Philip Henry Highfill, Jr., Ph.D., *Associate Professor of English Literature*
John Gage Allee, Jr., Ph.D., *Associate Professor of English Philology*
John Palmer Reesing, Jr., Ph.D., *Associate Professor of English Literature*
Robert Elemer Gajdusek, A.M., *Assistant Professor of English*
Elizabeth Truman Wright, A.M., *Instructor in English Composition*
Nancy Marie Patterson, Ph.D., *Instructor in English*
Gennaro Anthony Santangelo, A.M., *Instructor in English*
Paul Harold Stacy, A.M., *Instructor in English*
Paul Curry Steele, A.B., M.F.A., *Instructor in English Composition*
James Gerard Sweeney, A.M., *Instructor in English*

Bachelor of Arts with a major in American Thought and Civilization (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 68.

Required: the general requirements of Columbian College as stated on pages 82–88 and the grade "pass" on the American Thought and Civilization major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined is summarized under four general headings: (1) European cultural history—the Renaissance and modern social and intellectual cultures as a background to contemporary civilization with particular attention to English literature and history from the 16th through the 19th centuries; (2) American history—the political, economic, social, and religious thought and experience of the American people; (3) American philosophy and fine arts—a survey of periods and movements with a knowledge of outstanding individuals; (4) American literature—a knowledge of major writers, together with a study of poetry, fiction, and drama. The Department of English provides a proseminar (English 179–80) intended to assist the student in preparing himself for the major examination. The major adviser will give to each student at registration a check list of available courses grouped as prerequisite, necessary, or desirable for the completion of the major study program.

Bachelor of Arts with a major in English Literature (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College described on page 68. It is recommended that prospective majors elect English 91–92 from among the listed offerings.

Required: the general requirements of Columbian College as stated on pages 82–88, and the passing of the English Literature major examination at the end of the senior year. The field of coordinated knowledge upon which the student will be examined at the end of his senior year is summarized under the following general headings: (1) the history of English literature from the Anglo-Saxon period; (2) the chief English writers (a certain familiarity with each man and his main works and a detailed knowledge of Shakespeare); (3) English social and political history as it bears upon or is reflected in the literature; (4) European intellectual backgrounds and movements which have affected English literature. The proportion of work taken in each of these areas should be worked out by the student in consultation with one of the English Literature advisers. The Department of English provides a proseminar (English 199–200) to assist the student in preparing himself for the major examination. A detailed description of the major is available in the Office of the Dean of Columbian College.

Master of Arts in the field of American Literary and Cultural History (Columbian College).—Prerequisite: the equivalent of an undergraduate major in this University in (1) History (with American history as a major part), (2) American Thought and Civilization, or (3) English Literature (with introductory courses in American literature and American history). The student who has not taken any of the above majors at this University must take a candidacy examination.

Required: in addition to the general requirements of Columbian College as stated on pages 89–92, the following specific requirements must be met: twelve of the required semester hours must be of seminar study, six in American history and six in American literature; twelve of the required semester hours must be of second and third group courses in the fields of American history, literature, philosophy, education, and art recommended by the adviser; a thesis (six semester hours) in any of the foregoing fields or in some combination of them. Because of the various undergraduate majors which will be accepted for admission to this program, a basic reading list is assigned to all students, to assist in preparing them for the final Master's examination.

Master of Arts in the field of English and American Literature (Columbian College).—Prerequisite: an undergraduate major in English Literature or American Thought and Civilization at this University; or twenty-four semester hours in English and/or American literature above the sophomore level. The student who has not taken either of the above majors at this University, must take a candidacy examination. The student offering split preparation (English and American literature) will be examined in English and American literature.

Required: in addition to the general requirements of Columbian College as stated on pages 89–92, the following specific requirements must be met: (1) a schedule of courses amounting to twenty-four semester hours, planned in consultation with the adviser; on the basis of the student's undergraduate preparation, to include a comprehensive survey of American literature and of English literature from 1600; (2) a Master's thesis (six semester hours) written upon an approved topic under the direction of the instructor in whose field the major portion of the material falls; (3) a final written examination, on American literature and on English literature from 1600.

Master of Arts in the field of English Literature (Columbian College).—Prerequisite: an undergraduate major in English Literature at this University, or twenty-four semester hours in English literature above the sophomore level. The student who has not passed the major examination in English at this University must take a candidacy examination which, in its scope and difficulty, is comparable to the major examination in English.

Required: in addition to the general requirements of Columbian College as stated on pages 89–92, the following specific requirements must be met: (1) a schedule of courses amounting to twenty-four semester hours, planned in consultation with the adviser; (2) a Master's thesis (six semester hours) written upon an approved topic under the direction of the instructor in whose field the material falls; and (3) a final written examination.

Doctor of Philosophy (Graduate Council).—See page 98.

Bachelor of Arts in Education with a teaching field in English (School of Education).—Prerequisite: the Education curriculum, page 70.

Required: the English option, page 166; and the professional courses listed on page 171.

ENGLISH COMPOSITION

First Group

The Staff

A *English Practice* (3)

Fall—as arranged; spring—as arranged; summer 1958.

Instruction, drill, and exercises in grammar, vocabulary, spelling, and mechanics in general; instruction and exercises in composition and reading. This course is designed to prepare students for English 1.

Allee

B *English for Foreign Students* (3)

Fall—morning and evening; spring—morning and evening; summer 1958.

A course in reading and writing designed to prepare the student for English 1. Special attention is given to spelling, syntax, grammar, idiom, and vocabulary.

Moore and Staff

1 *English Composition* * (3)

Fall—morning and evening; spring—morning and evening; summer 1958.

Review of grammar, exercises in composition, readings.

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* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A.

All pre-Columbian College students (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, or Spanish) will follow the sequence of English 1, both semesters of one of the introductory literature courses and English 4.

English 1 is prerequisite to all other courses in English. English 2 is the second half of the six-hour composition course requirement of students *not* required to follow the pre-Columbian College sequence.

2 *English Composition* * (3) Moore and Staff

Fall—morning and evening; spring—morning and evening; summer 1958.

Exercises in composition, readings. The second half of the six-hour English Composition course required of all students not in the pre-Columbian College curricula.

4 *English Composition* * (3) Moore and Staff

Fall—morning and evening; spring—morning and evening; summer 1958.

A course in critical analysis and practice of expository and argumentative techniques and in research procedure. The second half of the six-hour English Composition course required of students in the pre-Columbian College curricula. Prerequisite: English 1 and both semesters of one of the introductory literature courses.

11 *The Writing of Reports* (3) Turner and Staff

Fall—morning and evening; spring—morning and evening; summer 1958.

Theory and practice in the writing of technical reports. Prerequisite: English 1, and 2 or 4.

SECOND GROUP

109 *Expository Writing* (3) McClanahan and Staff

Fall—evening.

A study of types of expository writing with weekly exercises. Prerequisite: English 1, and 2 or 4.

113 *Narrative Writing* (3) ———

Fall—evening.

Study of the techniques of narrative writing and class criticism of student writing. Prerequisite: English 1, and 2 or 4.

114 *The Writing of Fiction—the Short Story* (3) ———

Spring—evening.

Prerequisite: English 113; consent of instructor.

116 *Advanced Exposition* (3) Moore

Spring—evening.

Theory and practice in the writing of expository articles and essays. Prerequisite: English 109; consent of instructor.

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* See footnote on page 308.

117–18 *The Writing of Fiction—the Novel* (3–3)

Academic year—evening.

Writing a novel. Prerequisite: English 114; consent of instructor.

ENGLISH LITERATURE

First Group

51–52 *Introduction to English Literature* * (3–3) Tupper and Staff

Academic year—morning, afternoon, and evening; summer 1958.

A historical survey. Prerequisite: English 1.

91–92 *Introduction to European Literature* * (3–3) Shepard and Staff

Academic year—morning and evening.

Consideration of various types. Prerequisite: English 1.

Second Group*

121–22 *English Literature from the Beginnings to 1500* (3–3) Allee

First half: not offered 1958–59. *Second half:* spring—morning.

First half: English literature prior to Chaucer. *Second half:* Chaucer.

125 *The Evolution of Modern Speech* (3) Allee

Fall—Evening.

The development of the English language in a historical treatment of English grammar.

129–30 *Elizabethan Nondramatic Literature* (3–3) Tupper

Academic year—evening.

Nondramatic literature from 1485 to 1601.

135–36 *Shakespeare* (3–3) Tupper

Academic year—morning; summer 1958—English 135 (3).

139–40 *The Seventeenth Century* (3–3) Linton

Not offered 1958–59. (See English 239–40.)

First half: poetry and prose from 1603 to 1660. *Second half:* Milton.

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* All pre-Columbian College students (who are required to take one year of English composition and one year of literature in English, Classical Languages, French, German, or Spanish) will follow the sequence of English 1, both semesters of one of the introductory literature courses, and English 4.

English 51–52, 71–72, 91–92, Classical Languages and Literatures 71–72, French 51–52, German 51–52, or Spanish 51–52 is prerequisite to all second-group courses except English 125.

141–42 *The Neoclassical Movement* (3–3) Highfill

Academic year—morning; summer 1958—English 142 (3).

Poetry and prose from 1660 through the mid-eighteenth century.

151–52 *The Romantic Movement* (3–3) Reesing

Academic year—evening.

From the mid-eighteenth century through Shelly and Keats.

161–62 *Victorian Literature* (3–3) Shepard

Academic year—morning.

Poetry and prose from 1830 to 1900.

165–66 *The Twentieth Century* (3–3) Linton

Academic year—evening; summer 1958—English 165 (3).

British poetry, prose, and drama since 1900.

181–82 *The English Novel* (3–3) Reesing

Academic year—morning.

Major English novelists from the eighteenth century to the present day.

183–84 *The English Drama* (3–3) Highfill

Academic year—evening; summer 1958—English 184 (3).

First half: concerned principally with the drama of Shakespeare's contemporaries. *Second half:* a historical survey from 1660 to the present day.

192 *Medieval Legend and Saga* (3) Allee

Not offered 1958–59.

Celtic and Norse.

199–200 *Proseminar: Readings for the English Literature Major* (3–3) Tupper, Highfill

Academic year—afternoon and evening.

Conferences and group discussions.

Third Group

222 *The Age of Chaucer* (3)

Not offered 1958–59.

223–24 *Old English* (3–3) Allee

Academic year—evening.

English language and literature before 1100. *First half:* Old English grammar and readings. *Second half:* Beowulf.

235–36 *Studies in Shakespeare and His Contemporaries* (3–3) Tupper

1959–60 and alternate years.

Prerequisite: English 135–36.

239–40 *Studies in Seventeenth Century Literature* (3–3) Reesing

Academic year—evening.

Open to qualified undergraduates. *First half:* chief figures exclusive of Milton. *Second half:* Milton.

241–42 *Studies in Neoclassical Literature* (3–3) Highfill

1959–60 and alternate years.

Prerequisite: English 141–42.

251–52 *Studies in the Romantic Movement* (3–3) Reesing

Not offered 1958–59.

Prerequisite: English 151–52.

261–62 *Studies in Victorian Literature* (3–3) Shepard

Not offered 1958–59.

Prerequisite: English 161–62.

265–66 *Studies in Twentieth Century Literature* (3–3) Linton

Not offered 1958–59.

Eliot and his contemporaries.

295–96 *Studies in the History of English Literary Criticism* (3–3) Shepard

Summer 1958—English 296 (3).

Open to undergraduates with the approval of the instructor.

299–300 *Thesis* (3–3) The Staff

AMERICAN LITERATURE

First Group

71–72 *Introduction to American Literature* * (3–3) Cole and Staff

Academic year—morning and evening; summer 1958.

A historical survey. *First half:* from the beginnings to the Civil War. *Second half:* from Civil War to the present. Prerequisite: English 1.

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* See footnote on page 313.

SECOND GROUP*

170 *The American Short Story* (3) Coberly

Summer 1958.

The historical development of the short story in America.

171–72 *Studies in American Literature* (3–3) Cole

1958–59 and alternate years: academic year—evening; 1959–60 and alternate years: academic year—morning.

Major factors in the national cultural tradition as shown by outstanding writers. Prerequisite: English 51–52 or 71–72.

173–74 *Major American Poets* (3–3)

Academic year—morning; summer 1958—English 174 (3).

Advanced critical study of significant writers and movements. *First half:* from beginnings through nineteenth century. *Second half:* the twentieth century.

175–76 *American Drama* (3–3)

1958–59 and alternate years: academic year—morning; 1959–60 and alternate years: academic year—evening.

Historical and critical study of significant plays and forms. *First half:* from beginnings through nineteenth century. *Second half:* the twentieth century.

177–78 *American Fiction* (3–3) Coberly

1958–59 and alternate years: academic year—evening. 1959–60 and alternate years: academic year—morning.

Historical and critical study of significant novels and short stories. *First half:* from beginnings through nineteenth century. *Second half:* the twentieth century.

179–80 *Proseminar: Readings for American Thought and Civilization Majors* (3–3) The Staff

Academic year—as arranged.

Conferences and group discussions.

THIRD GROUP

271–72 *Seminar: American Literature* (3–3) Coberly

Academic year—as arranged.

Prerequisite: English 171–72 or the equivalent.

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* All pre-Columbian College students (who are required to take one year of English compoition and one year of literature in English, Classical Languages, French, German, or Spanish) will follow the sequence of English 1, both semesters of one of the introductory literature courses, and English 4. English 51–52, 71–72, 91–92, Classical Languages and Literatures 71–72, French 51–52, erman 51–52, or Spanish 51–52 is prerequisite to all second-group courses except English 71–72.

277–78 *Studies in American Fiction* (3–3) Coberly

Academic year—as arranged.

Prerequisite: English 177–78 or the equivalent. Open to the undergraduate with the approval of the instructor.

279–80 *Thesis* (3–3) The Staff

Related Courses in Other Departments

Education 136, *Teaching English*

History 151–52, *English History*

Philosophy 111–12, *History of Philosophy*

GEOGRAPHY

Robert Dale Campbell, Ph.D., *Professor of Geography, Executive Officer*

Harland Walter Westermann, A.M., *Assistant Professor of Geography*

Richard Ernest Murphy, Ph.D., *Assistant Professor of Geography*

Bachelor of Arts with a major in Geography (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 68. It is strongly recommended that this curriculum include: Botany 1, 2; Economics 1–2; History 71–72; and Statistics 91–92. Electives must include Geography 51 and 52.

Required: in addition to the general requirements of Columbian College as stated on pages 82–88, twenty-four semester hours of Geography beyond first-group courses, including Geography 103–4, 113, and 114; fifteen semester hours in one or more of the following departments: Botany, Geology, Economics, History, Political Science, Sociology; and 6 semester hours of Mathematics.

Master of Arts in the field of Geography (Columbian College).—Prerequisite: the degree of Bachelor of Arts with a major in Geography from this University, or the equivalent.

Required: the general requirements of Columbian College as stated on pages 89–92. The thirty hours of required work must include Geography 201–2 and 299–300.

Bachelor of Arts in Education with a teaching field in Geography (School of Education).—Prerequisite: the Education curriculum, page 70.

Required: the Geography option, page 167 and the professional courses listed on page 171.

Doctor of Philosophy (Graduate Council).—See page 97.

FIRST GROUP

51 *Introduction to Geography* (3) The Staff

Fall—morning; spring—evening; summer 1958.

A study of place attributes and characteristics; patterns and associations of physical and cultural earth features.

52 *World Regions* (3) The Staff

Fall—evening; spring—morning; summer 1958.

The analysis of world regional divisions; description and interpretation of region complexes; evaluation of regional differences as they affect the distribution and activities of man.

SECOND GROUP

103–4 *Cartography* (3–3) Westermann

A year course: credit is not given for the first half until the second half is completed.

Academic year—Saturday morning.

Principles of cartographic drafting; elementary map projections; map and graph planning, design, and construction; uses and interpretation of maps. Prerequisite: Geography 51 and 52. Laboratory fee, $11 a semester.

113 *Geomorphology* (3)

Murphy

Spring: lecture—afternoon, laboratory—as arranged.

The nature and evolution of earth forms, with special emphasis upon relief features of North America. Prerequisite: Geography 51.

114 *Weather and Climate* (3)

Murphy

Fall: lecture—afternoon, laboratory—as arranged.

Rudimentary atmospheric physics, air mass and frontal weather analysis, regional climatology. Prerequisite: Geography 51.

125 *Economic Geography: Trade and Transportation* (3)

1959–60 and alternate years.

The influence of geographic factors on the forms of transportation and upon trade routes and centers.

126 *Economic Geography: Raw Materials* (3)

1959–60 and alternate years.

Location and utilization of raw materials essential to modern technology; position of the United States with regard to such materials.

127 *Economic Geography: Manufacture* (3)

Westermann

Fall—morning.

Location and distribution of manufactural industries; analysis of the factors determining both; internal structures and external relationships of selected industries.

128 *Economic Geography: Agriculture* * (3)

Westermann

Spring—morning.

Analysis of types and distribution of agricultural practices; crop ecology; character of predominantly agricultural economies.

131 *Conservation of Natural Resources* * (3)

Murphy

Fall—morning.

Principles and problems of conservation of vital natural resources: soils, water, forests, minerals, fuels, wildlife. Prerequisite: Geography 51 and 52.

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* The following courses are strongly recommended for students particularly interested in land use, agricultural geography, and conservation: Botany 141–42, *Plant Ecology*; 143, *Introduction to Plant Geography*; 144, *The Vegetation of North America*; and 161, *Soils*.

132 *Land Use* * (3) Murphy

Spring—morning.

Principles of geographic area analysis and land planning. Prerequisite: Geography 51 and 52.

141 *Geography of Settlement* (3)

1959–60 and alternate years.

The study of the nature and form of settlement, and of population trends and patterns. (Sociology 141, *Population Problems*, is strongly recommended as an elective for students particularly interested in demography.)

142 *Urban Geography* (3)

1959–60 and alternate years.

Location, form, and function of cities. (Sociology 126, *Urban Sociology*, is strongly recommended as an elective for students particularly interested in urban studies.)

145 *World Cultural Geography* (3) Koenig

Fall—morning.

Cultural variations from place to place on the surface of the earth; their development; cultural aspects of regional personality.

146 *World Political Geography* (3) Koenig

Spring—morning.

151 *Economic Geography of the United States* (3) Murphy

Fall—evening.

The bases of regional economic development; character of the economic structure of the United States and its relationship with other areas of the world.

152 *Political Geography of the United States* (3) Murphy

Spring—evening.

The basis of political "regionalism" within the United States and of our political relationships with other nations.

171 *Field Geography* (3) Westermann

Not offered 1958–59.

Field study methods, training in mapping and analysis techniques for both rural and urban areas. Prerequisite: Geography 51 and 52. Transportation fee, $18.

174 *Map Interpretation* (3)

Not offered 1958–59.

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* See footnote on page 316.

Campbell

183 *Western Europe** (3)

Fall—evening.

Campbell

184 *The Mediterranean** (3)

Spring—evening.

185 *Africa** (3)

Not offered 1958–59.

186 *The Middle East** (3)

Not offered 1958–59.

191 *Middle America** (3)

1959–60 and alternate years.

192 *South America** (3)

1959–60 and alternate years.

195 *Eastern and Southeastern Asia** (3)

Not offered 1958–59.

196 *The Soviet Union** (3)

1959–60 and alternate years.

197 *The Pacific** (3)

Not offered 1958–59.

Westermann

198 *Australia** (3)

Summer 1958.

THIRD GROUP†

Campbell

201–2 *Seminar: History and Philosophy of Geography* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

Westermann

211–12 *Reading Course in Economic Geography* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

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* Regional survey. No prerequisites. For students particularly interested in the study of specific regions, regional courses in the departments of Economics, History, and Political Science are strongly recommended, for example: Economics 185–6, *Economic History and Problems of Latin America;* History 164, *South America since Independence;* and Political Science 17 *Recent Trends in Latin American Politics and Government.*

† Senior major or graduate status is required in all third-group courses.

221 *Seminar: Military Geography* (3) Campbell

Not offered 1958–59.

231–32 *Seminar in Geography* (3–3) Murphy

Summer 1958—Geography 231 (3).

251–52 *Seminar: World Problem Areas—the Rim Lands* (3–3) Murphy

Academic year—evening.

First half: the Middle East. *Second half:* Southeast Asia.

295–96 *Research* (3–3) The Staff

Academic year—as arranged.

Special directed studies.

299–300 *Thesis* (3–3) The Staff

Course Offered in Special Program

In addition to the regular courses announced above, the University offers the following course for students enrolled in the Engineering Administration program.

271 *Engineering Geography* (3)

GEOLOGY

Geza Teleki, Ph.D., *Associate Professor of Geology, Executive Officer*
Charles Louis Christ, Ph.D., *Professorial Lecturer in Geology*
Michael Fleischer, Ph.D., *Professorial Lecturer in Geology*
Howard Tasker Evans, Jr., Ph.D., *Professorial Lecturer in Geology*
Irving Friedman, Ph.D., *Lecturer in Geology*

Bachelor of Arts or *Bachelor of Science with a major in Geology (Columbian College—Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, pages 68 and 69. The following first-group courses must be included: Geology 1–2, 12, 51; Chemistry 11–12; Physics 5, 6; Biology 1–2 or Zoology 1–2.

Required: in addition to the general requirements of Columbian College as stated on pages 82–88, twenty-four semester hours in Geology beyond first-group courses.

Master of Arts or *Master of Science in the field of Geology (Columbian College).*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Geology from this University, or the equivalent.

Required: the general requirements of Columbian College as stated on pages 89–92.

Note: The Department of Geology has recently been reactivated after a lapse of several years. It is planned, therefore, that as the program develops courses in addition to those listed below will be offered, including History of Geological Science, Geophysics, Economic Geology, Vertebrate Paleontology, Paleobotany, Geomorphology (now offered in the Department of Geography), Advanced General Geology, and graduate work in Sedimentary Petrography.

First Group

1–2 *Introductory Geology* (3–3)

Teleki

Academic year: lecture (2 hours), laboratory and field trip (hours)—morning.

A survey course covering the principles of geology. *First hal* physical geology—material of the earth's crust, geologic processes. *Second half:* historical geology, geological periods, evolution of life o earth. Laboratory fee, $5 a semester.

12 *Minerals and Rocks* (3)

Teleki

Spring: lecture (2 hours), laboratory (2 hours)—morning.

Analysis, identification, and classification of minerals and rocks; thei origin and occurrence. Prerequisite: Geology 1–2 or permission o the instructor. Laboratory fee, $5.

51 *Introductory Paleontology and Stratigraphy* (3)

Fall—morning.

A survey course in paleontology; taxonomy and identification o fossils. Prerequisite: Geology 1–2 or permission of the instructor.

SECOND GROUP

111–12 *Mineralogy* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Academic year: lecture (2 hours), laboratory (2 hours)—evening.

First half: determinative crystallography. *Second half:* optical mineralogy. Study of minerals with the polarizing microscope. Prerequisite: Geology 1–2, Chemistry 11–12, Physics 5 and 6. Laboratory fee, $8 a semester.

115–16 *Petrography* (3–3)

Lecture (2 hours), laboratory (2 hours).
Not offered 1958–59.

Description, classification, and identification of igneous, sedimentary, and metamorphic rocks. Study of rocks with the polarizing microscope. Prerequisite: Geology 111–12. Laboratory fee, $8 a semester.

122 *Structural Geology* (3) Teleki

Spring—evening.

Interpretation of geologic formations on the basis of their structures and genesis. Principles of mega- and micro-tectonics. Prerequisite: Geology 1–2, Physics 5 and 6.

123 *Geotectonics* (3)

Not offered 1958–59.

Evolution of the earth's crust, subcrustal movement, epirogenetic and orogenic cycles, and the formation of geosynclines and mountain systems. Prerequisite: Geology 122.

151–52 *Invertebrate Paleontology* (3–3) Teleki

Academic year: lecture (2 hours), laboratory and field trip (2 hours) —evening.

Taxonomy of fossil invertebrates, development of phyla, paleoecology of invertebrate organisms. Prerequisite: Geology 1–2, 51, Biology 1–2 or Zoology 1–2. Laboratory fee, $7 a semester.

165–66 *Stratigraphy* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1958–59.

First half: sedimentation and facies, space and time sequence of rocks, evaluation of boundaries. *Second half:* principles of correlation, stratigraphic geology. Prerequisite: Geology 1–2, 12, 51, 122; Chemistry 11–12; Biology 1–2 or Zoology 1–2.

173 *Regional Geology I* (3)

Not offered 1958–59.

Lecture and map work on the regional distribution of geological formations and structures of the Western Hemisphere, with special emphasis on the United States. Prerequisite: Geology 1–2, Geography 51.

174 *Regional Geology II* (3)

Not offered 1958–59.

Lecture and map work on the regional distribution of geological formations and structures of the Eastern Hemisphere, with special emphasis on Eurasia. Prerequisite: Geology 1–2, Geography 51.

THIRD GROUP

205–6 *Seminar* (3–3) The Staff

Academic year—as arranged.

Special topics. Does not repeat itself and may be elected in successive years.

211 *X-ray Crystallography* (3) Christ

1958–59 and alternate years: fall—evening.

The structure of crystals as determined by the X-ray method.

212 *Crystal Chemistry* (3) Evans

1958–59 and alternate years: spring—evening.

Chemistry of the solid state. Bounding and coordination and the role of crystalline structure in chemistry and mineralogy.

241 *Geochemistry* (3) Fleischer

Not offered 1958–59.

Principles and theories on the abundance, relationships, and the distribution in the various rock and mineral species.

244 *Isotope Geology* (3) Friedman

Not offered 1958–59.

Investigation of geological phenomena by means of stable and unstable isotopes of elements and of changes in their abundance.

251–52 *Micropaleontology* (3–3)

Lecture and laboratory. Academic year—evening.

Taxonomy and ecology. Identification with binocular microscope of foraminifera and radiolaria. Prerequisite: Geology 151 or the equivalent. Laboratory fee, $10 a semester.

275 *Comparative Regional Geology* (3) The Staff

Not offered 1958–59.

Comparison of selected regions with regard to their structure, evolution, and stratigraphic correlation. Prerequisite: Geology 173, 174 or the equivalent.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged.

GERMANIC LANGUAGES AND LITERATURES

Gretchen Louisa Rogers, Ph.D., *Associate Professor of German*
Wolfram Karl Legner, Ph.D., *Associate Professor of German, Executive Officer*
James Cecil King, Ph.D., *Assistant Professor of German*

Bachelor of Arts with a major in Germanic Languages and Literatures (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 68.

Required: in addition to the general requirements of Columbian College as stated on pages 82–88. German 51–52 plus eighteen semester hours in German courses above the first group; reasonable proficiency in speaking and writing German; History 39–40 or the equivalent; six semester hours in Philosophy selected with the approval of the adviser. Majors in German are strongly advised to study French.

Master of Arts in Germanic Languages and Literatures (Columbian College).—Prerequisite: a Bachelor of Arts degree with a major in Germanic Languages and Literatures from this University, or the equivalent.

Required: the general requirements of Columbian College as stated on pages 89–92; a reading knowledge of French. The thirty hours of required work must include a thesis in the field of German literature or linguistics.

Bachelor of Arts in Education with a teaching field in German (School of Education).—Prerequisite: the Education curriculum, page 70.

Required: the German option, page 168 and the professional courses listed on page 171.

First Group

1–2 *First-year German* (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed.
First half: fall—morning and evening; spring—morning; summer 1958.
Second half: fall—morning; spring—morning and evening; summer 1958.

The essentials of German grammar; translation of easy prose.

3–4 *Second-year German* (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed.
First half: fall—morning and evening; spring—morning; summer 1958.
Second half: fall—morning; spring—morning and evening; summer 1958.

Selections from modern German prose; review of grammar. Prerequisite: German 1–2 or two years of high school German.

9–10 *German Conversation and Composition* (3–3) Rogers

Academic year—morning.

49 *German Readings for Nonmajor Students* (3) Legner

Fall—Saturday morning; spring—evening; summer 1958.

Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students.

51–52 *Introduction to German Literature* (3–3) King

Academic year—morning.

Prerequisite: German 4 or the equivalent.

SECOND GROUP

103–4 *Goethe's "Faust"—Parts I and II* (3–3) Legner

1958–59 and alternate years: academic year—evening.

128 *German Literature from the Beginnings to the Age of Enlightenment* (3) Legner

1958–59 and alternate years: spring—as arranged.

131–32 *German Literature of the Eighteenth Century* (3–3) Rogers

1959–60 and alternate years.

The age of Lessing, Goethe, and Schiller.

141–42 *German Literature of the Nineteenth Century* (3–3) King

1959–60 and alternate years.

Romanticism, realism, and naturalism.

151–52 *German Literature of the Twentieth Century* (3–3) Rogers

1958–59 and alternate years: academic year—evening.

179–80 *Advanced Composition for Undergraduate and Graduate Majors* (1–1) King, Legner

Academic year—as arranged.

THIRD GROUP

201–2 *Middle High German* (3–3) Legner

1959–60 and alternate years.

209–10 *Old High German* (3–3) King

1958–59 and alternate years: academic year—as arranged.

299–300 *Thesis* (3–3) The Staff

HISTORY

Elmer Louis Kayser, Ph.D., LL.D., *Professor of European History*
Wood Gray, Ph.D., *Professor of American History*
Howard Maxwell Merriman, Ph.D., *Professor of American Diplomatic History, Executive Officer*
Myron Law Koenig, Ph.D., *Professor of American History*
Roderic Hollett Davison, Ph.D., *Professor of European History*
William Columbus Davis, Ph.D., *Associate Professor of Latin American History*
Ronald Bettes Thompson, Ph.D., *Associate Professor of European History*
Richard Catlin Haskett, Ph.D., *Associate Professor of American History*

Bachelor of Arts with a major in History (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 68. Electives must include History 39–40 and 71–72.

Required: the general requirements of Columbian College as stated on pages 82–88 and the grade of "pass" on the History major examination at the end of the senior year.

The major, centered on the study of the rise, development, and spread, and the continuing challenges of Western civilization, is attested by a major examination. Under the guidance of an adviser the student will arrange his program in History to attain a balanced coverage of (1) the rise of civilization in Europe to the eve of the French Revolution, (2) the spread of Western culture throughout the world since the close of the fifteenth century, (3) the historic problems of modern industrial civilization from the beginnings of the Industrial Revolution, and (4) the relations of the major nations of Europe and America in their world setting since the Napoleonic Wars. A six-hour research seminar to give training in fundamental techniques is a required part of each major's program, and a proseminar (History 199–200) is offered as a means of integrating the student's understanding of the continuity of Western civilization. For details relating to the administration and content of the major, see the pamphlet on this subject, which is available in the offices of the Dean of Columbian College and the Executive Officer of the History Department.

Bachelor of Arts with a major in Latin American Civilization (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 68.

Required: the general requirements of Columbian College as stated on pages 82–88 and the grade of "pass" on the Latin American Civilization major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes political and social history, economic development, governmental structures and international relations, and the principal literary works and writers of the Latin American republics. The Department of History provides a proseminar (History 197–98) intended to assist the student in preparing himself for the major examination. For further details, see the pamphlet, which is available in the Office of the Dean of Columbian College.

Master of Arts in the field of History (Columbian College).—Prerequisite: the degree of Bachelor of Arts with a major in History from this University, or the equivalent, and the approval of the Department.

Required: the general requirements of Columbian College, as stated on pages 89–92. Of the twenty-four semester hours of required second- and third-group courses (exclusive of the thesis), at least six must be in third-group history courses; a maximum of six may be in a closely related field outside the Department of History as approved by the Department. Master's candidates are responsible for arranging with instructors of second-group courses for extra work, in order to receive graduate credit for such courses.

Master of Arts in the field of Latin American Civilization (Columbian College).—Prerequisite: the degree of Bachelor of Arts with a major in Latin American Civilization from this University, or the equivalent.

Required: the general requirements of Columbian College, as stated on pages 89–92. Course work and the comprehensive examinations will embrace political and social history, governmental structures and international relations, economic development, and principal literary works of Latin America. The thesis may be written in any one of these four fields. All courses must be approved in advance by the Adviser.

Doctor of Philosophy (Graduate Council).—See page 97.

Bachelor of Arts in Education with a teaching field in History (School of Education).—Prerequisite: the Education curriculum, page 70.

Required: the History option, page 168, and the professional courses listed on page 171.

FIRST GROUP

39–40 *The Development of European Civilization* (3–3) Kayser, Davison, Thompson

Academic year—morning and evening; summer 1958.

Primarily for freshmen. *First half:* the political, social, economic, and cultural history of the Old World from ancient times to 1715. *Second half:* from 1715 to the present.

71–72 *The Development of the Civilization of the United States* (3–3) Koenig, Haskett

Academic year—morning and evening; summer 1958.

Primarily for sophomores. *First half:* the political, social, economic, and cultural forces of the United States in their world setting from 1492 to 1865. *Second half:* from 1865 to the present.

SECOND GROUP[*]

109 *Thought and Culture of the Western World I: Ancient Civilization* (3) Kayser

1958–59 and alternate years: fall—morning.

Intellectual and social awakenings in the Near East, Greece, and Rome; classical art, letters, philosophy, and science.

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[*] History 39–40 is prerequisite to courses 109 through 152 and 190 through 196; History 71–72, to courses 171 through 184; either History 39–40 or 71–72, to courses 161 through 166.

110 *Thought and Culture of the Western World II: the Middle Ages and Renaissance* (3)

Kayser

1958–59 and alternate years: spring—morning.

Christian thought from Augustine to Thomas Aquinas; humanism and the classical revival, rise of vernacular literatures, the fine arts.

119 *Thought and Culture of the Western World III: from the Reformation through the Age of Reason* (3)

Kayser

1959–60 and alternate years.

The growth of Protestant polity and doctrine; the Counter-Reformation; the scientific revival; rationalism and the Enlightenment; arts and letters.

120 *Thought and Culture of the Western World IV: Intellectual Aspects of the Modern Age* (3)

Kayser

1959–60 and alternate years.

The evolution of democratic and social concepts, liberalism and authoritarianism in religion and in politics, the impact of modern science and technology, romanticism and realism.

130 *Nationalism* (3)

Kayser

Summer 1958.

The historical evolution of modern nationalism.

144 *Modern Germany* (3)

Thompson

Not offered 1958–59.

German politics and culture as a driving force in the modern world, 1740–1945.

145–46 *Russian History* (3–3)

Thompson

Academic year—morning.

A political and cultural survey. *First half:* the Golden Age of the old regime, 1800–1917. *Second half:* the Bolshevik revolution and Soviet era, since 1917.

147 *Economic History of Europe* (3)

Gray

Fall—morning.

A survey from ancient times to the present day.

148 *Oversea Expansion of Europe* (3)

Koenig

Fall—evening.

International rivalries and the impact of European civilization in Africa and the Pacific basin since 1500, with emphasis on the nineteenth and twentieth centuries.

149–50 *European Diplomatic History* (3–3) Davison

Academic year—morning.

Background of the European state system and of diplomatic practices and relations since the Congress of Vienna, with emphasis on the policies and actions of the great powers and their statesmen. *First half:* to 1878. *Second half:* since 1878.

151–52 *English History* (3–3) Koenig

Academic year—morning.

A general survey of the development of political, social, and economic institutions of lasting significance in the English speaking world. *First half:* to 1689. *Second half:* since 1689.

161 *Ancient Americans* (3) Davis

1958–59 and alternate years: fall—morning.

A study of the Maya, Aztec, Inca, and other early civilizations of North and South America.

162 *Iberian Background of Latin America* (3) Davis

1958–59 and alternate years: spring—morning.

History of Spain and Portugal, with emphasis on developments leading to the rise and decline of the Spanish and Portuguese empires.

163 *Colonial Latin America* (3) Davis

Fall—evening.

Political, economic, social, and institutional developments in Spanish and Portuguese America from the conquest through the wars of independence.

164 *South America since Independence* (3) Davis

Alternate spring and summer terms: summer 1958; spring 1959—evening.

Development of the independent South American states in the 19th and 20th centuries.

166 *Mexico and the Caribbean since Independence* (3) Davis

Alternate spring and summer terms: summer 1959; spring 1960.

A survey of the republics of Mexico, Central America, and the Caribbean islands.

171–72 *Social History of the United States* (3–3) Gray

Academic year—evening; summer 1958—History 172 (3).

Daily life, institutions, intellectual and artistic achievements of the Agrarian Era, 1607–1861; and the Urban-Industrial Era, 1861 to the present time.

Gray

173 *Representative Americans* (3)

Spring—morning; summer 1958.

A biographical approach to national history. Some fifty significant and pivotal personalities in the development of the United States in government, business, science, religion, journalism, the arts, and social reform.

Gray

174 *Economic History of the United States* (3)

Spring—morning.

Main trends in the development of American agriculture, industry, and trade since 1607, with emphasis on tendencies and problems since the Civil War.

Haskett

175–76 *Political and Constitutional History of the United States* (3–3)

Academic year—morning; summer 1958—History 175 (3).

The programs and conflicts of group interests in America within the political and legal framework. *First half:* to the eve of the Civil War. *Second half:* the Civil War to 1940.

Gray

177 *The South* (3)

Fall—morning.

Rise of the plantation system and slavery; the intersectional conflict; and the problems and progress of the New South.

Koenig

178 *The West* (3)

Spring—evening.

The role of the frontier in American history.

Merriman

181–82 *Diplomatic History of the United States* (3–3)

Academic year—morning and evening; summer 1958.

Tendencies toward isolation, expansion, and collectivism; disputes with foreign countries and their settlement; and the activities of the American secretaries of state and diplomatic agents. *First half:* to 1898. *Second half:* since 1898.

Merriman

183 *Oversea Expansion of the United States* (3)

Not offered 1958–59.

The political, economic, social, and cultural life of our outlying possessions.

184 *Canada and the United States* (3) Merriman

Not offered 1958–59.

The historical background and main trends in the relationship of the two English-speaking peoples of North America.

190 *History of India* (3) Thompson

Summer 1958.

The civilization of India and her neighbors from the beginnings to independence.

191–92 *Current History* (1–1) Kayser

Academic year—afternoon.

Contemporary events in their world setting.

193 *History of the Near East* (3) Davison

Fall—morning.

The Byzantine, Arab, Persian, and Islamic backgrounds of Near Eastern history; the rise and decline of the Ottoman Empire; the action of European powers in the area; and the Ottoman breakup into the Turkish Republic and other successor states.

195–96 *History of the Far East* (3–3) Thompson

Academic year—evening.

First half: the civilization of China and Japan from the beginnings to 1800. *Second half:* the modern Far East under the impact of the West since 1800.

197–98 *Proseminar in Latin American Civilization* (3–3) Davis, Wythe, Robb

Academic year—as arranged.

Reading course for coordination and review. Open only to majors in Latin American Civilization.

199–200 *Proseminar: Reading for the History Major* (3–3) The Staff

Academic year—evening; summer 1958.

Limited to majors in History. Readings and discussions on main trends in the history of Western civilization, including representative selections from the classics of historical literature.

THIRD GROUP*

244 *Reading Course in Modern European History* (3) Davison

Spring—as arranged.

Primarily for graduate students.

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* Approval of the instructor is required for registration in each third-group course.

246 *Seminar in Eurasian History* (3) Thompson

Spring—evening.

247 *Reading Course in Eurasian History* (3) Thompson

Fall—as arranged.

Primarily for graduate students.

249 *Seminar in European Diplomatic History* (3) Davison

Fall—evening.

261–62 *Seminar in Latin American History* (3–3) Davis

1959–60 and alternate years.

271–72 *Seminar in the Social History of the United States* (3–3) Gray

Academic year—evening.

275–76 *Seminar in American Political and Constitutional History* (3–3) Haskett

Academic year—evening.

281–82 *Seminar in the Diplomatic History of the United States* (3–3) Merriman

Academic year—afternoon.

291–92 *Seminar* (3–3) The Staff

Academic year—as arranged; summer 1958.

Prerequisite: approval of the Department.

294 *Seminar in the History of the Modern Near East* (3) Davison

Spring—afternoon.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1958.

Required of all candidates for the Master's degree specializing in history.

HOME ECONOMICS

Frances Kirkpatrick, A.M., *Professor of Home Economics, Executive Officer*

Kathryn Mildred Towne, A.M., *Professor of Home Economics*

Bachelor of Science with a major in Home Economics (School of Education).—Prerequisite: the Home Economics curriculum in the Junior College, see pages 70–71. The requirements for the degree are stated on pages 162–63 and 171–72.

Bachelor of Arts in Education with a teaching field in Home Economics (School of Education).—Prerequisite: the Education curriculum on page 73. Required: the Home Economics option, pages 168–69 and the professional courses listed on page 171. (See also special bulletin).

First Group

1 *Food Selection and Preparation* (3) Kirkpatrick

Fall—morning and evening.

Composition, selection, and preparation of food; analysis of recipes; standard products; planning, preparing, serving, and estimating the cost of meals. Material fee, $18.

22 *Clothing: Its Selection, Cost, and Care* (3) Towne

Spring—morning and evening.

Clothing selections—the economic, aesthetic, and hygienic aspects; the application of the principles of color and design to individual selection; the care of clothing.

51 *Family Meals* (3) Kirkpatrick

Spring—morning.

The choice, purchase, preparation, and service of foods; dietary standards, food habits, and the nutritional needs of the family; problems of purchasing, care, and use of food by the consumer. Material fee, $11.

53 *Family Health and Household Sanitation* (3) Kirkpatrick

Spring—afternoon.

Home hygiene and home care of the sick; the principles of household sanitation in relation to health and diseases.

62 *Clothing Construction* (3) Towne

Fall—evening; spring—afternoon.

Simplified techniques and unit method of construction suitable for cotton, wool, silk, and man-made fibers; the use of commercial patterns and their alteration; the proper selection of color, design, and fabric. Material fee, $8.

71 *Costume Design and Fashion Economics* (3) Towne

Fall—afternoon.

Factors determining fashions and effect on cost of clothing; problems of the consumer of textiles and clothing; historic costume and its relation to modern dress. Material fee, $8.

72 *Household Textiles* (3) Towne

Fall—morning.

Properties, uses, and tests of the different textile fibers and fabrics, and development of judgment and knowledge of standard for the consumer of clothing and house-furnishing material. Material fee, $8.

77 *Marketing* (3)

Not offered 1958–59.

Purchasing of foods as it relates to the home and to the institution.

Second Group

102 *Advanced Food Preparation* (3) Kirkpatrick

Spring—morning.

The application of the fundamental processes of food preparation to a wider range of food materials and various services for different occasions. Material fee, $18.

106 *Quantity Cookery* (3) The Staff

Not offered 1958–59.

123 *Household Finance and Problems of the Consumer* (3) Towne

Fall—morning.

Economic problems of the family in modern industrial society; family income; income apportionment and household expenditures; laws affecting the home; investments; consumer buying.

143 *Advanced Clothing Construction* (3) Towne

Not offered 1958–59.

Problems of clothing construction and flat pattern designing. Material fee, $8.

148 *Food Problems and Demonstration Methods* (3) Kirkpatrick

Not offered 1958–59.

Factors affecting the preparation of standard products from the experimental viewpoint; principles of demonstration. Material fee, $18.

152 *Nutrition* (3) Kirkpatrick

Fall—morning.

Lecture course on the principles of normal and abnormal human nutrition. Laboratory work on the calculation and preparation of dietaries. Laboratory fee, $8.

154 *Diet Therapy* (3)

Not offered 1958–59.

Study of nutrition as applied to diet and disease. Material fee, $8.

164 *Child Nutrition* (3) Kirkpatrick

Not offered 1958–59.

Basic principles in nutrition and growth of the infant, preschool, and adolescent child in health and disease.

168 *Institutional Management* (3)

Not offered 1958–59.

Study of the organization, equipment, and marketing problems of institutions.

171 *House Furnishing* (3) Towne

Fall—afternoon.

Home planning from the historic, artistic, economic, and sanitary viewpoints; home furnishings such as linens, dishes, floor covering, mattresses, etc. Material fee, $5.

181 *The Child in the Home* (3) Kirkpatrick

Not offered 1958–59.

Care and development of children; parent-child relationships.

192 *The Home, Its Management and Equipment* (3) Kirkpatrick

Spring—evening.

Economic management of the home; distribution of time and energy; problems in the selection, arrangement, and care of equipment.

193 *Supervision of Home Management* (3) The Staff

Fall—as arranged.

Field work under supervision. Designed to meet requirements of those preparing to teach in federally aided schools.

The Staff

195–96 *Special Problems* (3–3)

First half: spring—afternoon. *Second half:* not offered 1958–59.

Individual investigation or study under the guidance of a member of the Staff. *First half:* such problems as marketing, draping, and the techniques of making decorations for clothing and for the home. *Second half:* problems of tailoring.

The Staff

197–98 *Proseminar* (3–3)

Academic year—evening.

The study of the most recent materials and problems in the various phases of home economics.

JOURNALISM

Ross Pelton Schlabach, Jr., M.S., *Professor of Journalism, Executive Officer*
Robert Crumpton Willson, A.B., *Assistant Professor of Journalism*
Frank Landt Dennis, A.B., LL.B., *Lecturer in Journalism*
John Vincent Hinkel, M.S., *Lecturer in Journalism*
Kip Ross, *Lecturer in Journalism*
Howard Lee Coppenbarger, *Lecturer in Journalism*
Jack Edward Eisen, A.B., *Lecturer in Journalism*
Coit Taylor Hendley, Jr., A.B., *Lecturer in Journalism*
Louis Robinson, A.B., *Lecturer in Journalism*
Louis Ray Stockstill, A.B., *Lecturer in Journalism*

SPECIAL LECTURERS

Richard Hollander, Managing Editor, *The Washington Daily News*
James Russell Wiggins, Executive Editor, *The Washington Post and Times Herald*

Bachelor of Arts with a major in Journalism (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 68, including English 51–52 or 71–72, History 71–72, Political Science 9–10, and Journalism 71–72.

Required:

(1) The general requirements of Columbian College, as stated on pages 82–88.

(2) Twenty-four hours of second-group courses in Journalism as follows: (a) Journalism 111, 115, 196, 198; (b) six hours chosen from Journalism 121, 133, 137, 144; (c) six hours chosen from Journalism 140, 142, 143, 145, 151.

(3) Twelve hours of second-group courses, chosen in consultation with the major adviser, in one other department of Columbian College. Students selecting science may take courses in more than one department.

FIRST GROUP

71–72 *Journalism in American Society* (3–3) Schlabach, Willson

Academic year—morning and evening.

Evolution of newspapers and other media in relation to political, social, and economic life; the concept of press freedom; introduction to fundamentals of news gathering and presentation.

SECOND GROUP

111 *Reporting* (3) Eisen, Coppenbarger

Fall—morning and evening; spring—evening.

Instruction and classroom practice in gathering, evaluating, and writing news; emphasis on newspapers, other media considered.

Schlabach

115 *Editing and Make-up* (3)

Fall—evening.

Editing of news and other material for publication, typography and display, use of pictures and other graphic presentations.

Willson

121 *Advanced Reporting: Magazine Feature Articles* (3)

Fall—morning; spring—evening.

Instruction and practice in writing magazine articles, material for which is obtained through independent investigation.

Hendley

133 *Advanced Reporting: Community News* (3)

Fall—evening.

Instruction and practice in coverage and writing of local news.

Stockstill

137 *Advanced Reporting: National Affairs* (3)

Spring—afternoon.

Instruction and practice in coverage and writing of federal government news from the point of view of the press association.

Ross

140 *Pictorial Journalism* (3)

Fall—evening.

Photographic techniques affecting publication, the illustration and the story angle, standards of judgment in selection and use of pictures, captions, editing techniques, cropping for effective reproduction.

Robinson

142 *Retail Newspaper Advertising* (3)

Spring—evening.

Retail newspaper advertising management, coordination of newspaper advertising with retail sales patterns, advertising readership, copy preparation, production methods.

Willson

143 *Industrial Communications* (3)

Fall—evening.

An introduction to the field of corporate journalism. Writing and editing the employee magazine. Preparation of annual reports. Editing stockholder publications and external house organs. The preparation of employee manuals, sales and training aids, catalogues and bulletins.

Willson

144 *Advanced Reporting: Specialized Press* (3)

Spring—evening.

Instruction and practice in coverage and writing of news and features for the business, scientific, and technical press and other specialized media.

145 *Principles and Problems of Public Relations* (3) Hinkel

Fall—Saturday morning.

Principles, problems, and ethics of public relations for government agencies, commercial establishments, educational and other public institutions. Case histories of successful programs.

151 *Editorial Writing* (3) Schlabach

Fall—evening.

Instruction and practice in writing of editorials on public affairs.

196 *Seminar* (3) Schlabach

Spring—evening.

For Journalism majors only. Research in areas relating journalism to secondary fields of study.

198 *Law of the Press* (3) Dennis

Spring—evening.

Freedom of the press, censorship, legislative controls, publications as contempt of court, copyright, news gathering agencies, labor law and the newspaper business, law of libel, privileged matter, fair comment on public characters, right of privacy.

LAW

William Thomas Fryer, A.B., LL.B., J.D., _Professor of Law_
Carville Dickinson Benson, A.B., LL.B., S.J.D., _Professor of Law_
James Forrester Davison, A.B., LL.B., LL.M., S.J.D., _Professor of Law_
Oswald Symister Colclough, B.S., LL.B., LL.D., _Professor of Law_
Herman Israel Orentlicher, A.B., LL.B., _Professor of Law_
[*]Leroy Sorenson Merrifield, A.B., LL.B., M.P.A., S.J.D., _Professor of Law_
Orville Hassler Walburn, A.B., LL.B., J.D., _Professor of Law_
David Benson Weaver, A.B., LL.B., _Professor of Law_
Louis Harkey Mayo, B.S., LL.B., J.S.D., _Professor of Law_
Glen Earl Weston, B.S., LL.B., _Professor of Law_
John Wingfield Jackson, B.S., LL.B., _Adjunct Professor of Law_
Frank Hammett Myers, LL.B., LL.M., _Adjunct Professor of Law_
John Albert McIntire, A.B., LL.B., LL.D., _Professorial Lecturer in Law_
Justin Lincoln Edgerton, A.B., LL.B., _Professorial Lecturer in Law_
Philip Field Herrick, A.B., LL.B., LL.M., _Professorial Lecturer in Law_
George Edward Monk, A.B., LL.B., LL.M., _Professorial Lecturer in Law_
Charles James Zinn, A.B., LL.B., LL.M., S.J.D., _Professorial Lecturer in Law_
Joseph Dach, LL.D., LL.B., _Professorial Lecturer in Law_
Louis James Harris, A.B., LL.B., S.J.D., LL.M., _Professorial Lecturer in Law_
John Joseph Czyzak, A.M., LL.B., _Professorial Lecturer in Law_
Leonard Patrick Walsh, A.B., LL.B., _Professorial Lecturer in Law_
Robert McKinney Cooper, Ph.M., J.D., _Associate Professor of Law_
William Thomas Mallison, Jr., A.B., LL.B., _Associate Professor of Law_
Robert Galloway Dixon, Jr., Ph.D., LL.B., _Associate Professor of Law_
Jackson Reid Hambrick, A.B., LL.B., _Associate Professor of Law_
Milton Paul Kroll, A.B., LL.B., _Associate Professorial Lecturer in Law_
Paul Archibald Rose, LL.B., _Associate Professorial Lecturer in Law_
George Nelson Robillard, B.S., LL.B., _Associate Professorial Lecturer in Law_
Gust Angelo Ledakis, B.B.A., LL.B., _Assistant Professor of Law_
Raymond Warren Young, Ph.D., J.D., _Assistant Professor of Law_
Crombie James Dickinson Garrett, A.B., LL.B., _Lecturer in Law_

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[*] On sabbatical leave spring semester 1958–59.

William Woolcott Goodrich, LL.B., *Lecturer in Law*
Vincent Kleinfeld, LL.B., *Lecturer in Law*
Herbert Joseph Liebesny, J.D., *Lecturer in Law*
Carl Clell Davis, B.S., LL.B., LL.M., *Lecturer in Law*
Thomas Hayward Brown, *Lecturer in Law*
Pasquale Joseph Federico, A.M., LL.B., *Lecturer in Law*
George Joseph Goldsborough, B.S., J.D., *Lecturer in Law*
Abe Krash, A.B., J.D., *Lecturer in Law*
Samuel Joseph L'Hommedieu, Jr., B.S., LL.B., LL.M., *Lecturer in Law*
John Alexander Kendrick, A.B., LL.B., *Clerk of the Trial Practice Court*
Dudley Graham Skinker, LL.B., *Associate Clerk of the Trial Practice Court*

For the requirements for the degrees of *Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law, Master of Comparative Law (American Practice)*, and *Doctor of Juridical Science*, see pages 125–28, 129–30.

FIRST YEAR

100 *Agency* (2) Cooper

Fall—evening; spring—morning.

Master and servant (status of agent), respondeat superior, nature of agency relation, actual authority, parties (disclosed and undisclosed principal), unauthorized transactions, notice, notification.

110 *Constitutional Law* (4) Collier, Mallison, Dixon

Spring—morning and evening.

Historical introduction, judicial approach and methods, doctrine of the separation of powers, powers of the National Government; the federal system and relation of federal and state courts; introduction to civil rights and liberties.

115–16 *Contracts I, II* (4–2) Mayo, Ledakis

Academic year—morning and evening; summer 1958.

Scope of protection accorded contracts; specific performance of contracts other than land transactions; damages, restitution. Mutual assent: offer and acceptance, misunderstanding, mistake, reformation, parol evidence rule. Consideration, third party beneficiaries, assignments, conditions, Statute of Frauds.

125 *Criminal Law and Procedure* (4) Cooper

Spring—morning and evening; summer 1958.

Origin and purposes of criminal law; elements of criminal liability; mental disorders; solicitation, attempt, and conspiracy; crimes against the person, against property, and against both; statutory offenses; criminal procedure, with consideration of Federal Rules of Criminal Procedure.

135 *Legal Method and Legal System* (4) Fryer, Benson, Davison, Merrifield, Walburn, Ledakis

Fall—morning and evening; spring—morning and evening; summer 1958.

Introduction to substantive and procedural law dealing with basic concepts; training in method and technique of case law and legislation using modern case records; practice in use of law books and in legal writing; importance of language in law; legal reasoning and use of precedents under doctrines of stare decisis, law of the case, and res judicata; development of Anglo-American legal system; organization of judiciary and bar, stressing enforcement of ethical standards.

145 *Personal Property* (2) Fryer, Dixon, Mallison, Young

Fall—morning and evening; spring—evening; summer 1958.

Concepts of property, including interests created by bailments, liens, and pledges; methods of acquiring ownership.

150 *Real Property* (2) Benson, Walburn, Ledakis

Fall—evening; spring—morning; summer 1958.

Historical background of the law of estates and conveyances. possessory estates, concurrent estates.

160 *Torts* (4) Merrifield, Walburn, Garrett

Fall—morning; spring—morning and evening.

Liability for harm to persons or tangible things; defamation and invasion of privacy.

Second Year

200 *Administrative Law* (4) Davison

Spring—morning and evening; summer 1958.

The position of the administrative process in the separation of powers, including the status of administrative personnel, administrative hearings, judicial scrutiny of administrative action, discretion, and rule-making—particularly as relating to federal administrative agencies.

205 *Brief Writing and Oral Argument* (2)

Not offered 1958–59.

Exposition and study of the basic techniques of written and oral legal argumentation. Each student will be required to write, as a term paper, a brief presenting contentions based on the actual record in an unargued case.

210 *Business Associations* (4) Weaver, Young

Spring—morning and evening; summer 1958.

Contrast of the partnership and corporation as alternative forms of organization; organizing partnerships and corporations—formalities.

capital contributions, share structure; problems of operation; relations between partners; roles of shareholders, directors, officers; control devices; distributions to owners; voluntary reorganization; dissolution and termination.

215 *Civil Procedure* (4) Walburn

Fall—morning and evening; summer 1958.

Pleadings, discovery, joinder, forms of trial and related proof problems. Emphasis is on Federal Rules of Civil Procedure and other modern codes.

219 *Commercial Paper* (4) Orentlicher, Ledakis

Fall—morning and evening; summer 1958.

Bills of exchange, promissory notes and checks, especially under the Negotiable Instruments Law.

224 *Commercial Transactions* (4) Orentlicher

Spring—morning and evening.

The law relating to the sale and distribution of goods, and to the security financing devices utilized in this connection, with particular attention to the effect of uniform laws.

230 *Conveyances* (2) Benson, Walburn

Fall—morning; spring—evening; summer 1958.

Conveyances, recording; easements, profits, covenants, and equitable servitudes; adverse possession and adverse user.

235 *Domestic Relations* (2) Mallison, Young, Krash

Fall—morning and evening; summer 1958.

Marriage, annulment, and divorce; adoption and custody of children; economic relations.

240 *Evidence* (4) Fryer, Weston

Spring—morning and evening; summer 1958.

Functions of court and jury; qualification and examination of witnesses; opinion, relevancy, and scientific evidence; proof of writings; application of the hearsay rule.

243 *Federal Jurisdiction* (2) Cooper

Fall—morning and evening.

Constitutional and statutory origins of federal courts, cases arising under the laws and the Constitution, diversity of citizenship, jurisdictional amount, removal procedure and jurisdiction, limitations on federal jurisdiction, state and federal conflicts, substantive law applied by federal courts.

248 *Future Interests* (2)

Benson

Spring—morning and evening.

Future interests at common law and under modern statutes, construction of limitations, powers of appointment, rule against perpetuities.

251 *Insurance* (2)

Summer 1958.

The insurance device in life, property, and other risks.

254 *International Law* (4)

Mallison

Spring—morning and evening.

The basic course. General survey of rights and duties of states; law of war and peace, including nationality law, international claims, pacific settlement of disputes, treaties, United Nations and World Court; study of source materials of International Law.

259 *Labor Law* (4)

Merrifield

Fall—morning and evening.

Law governing labor-management relations, organization and representation of employees, regulation of economic weapons, enforcement of collective bargaining agreements, interunion and intraunion relations.

265 *Legal Accounting* (2)

Hambrick

Fall—morning; spring—evening; summer 1958.

A study of elementary accounting principles and techniques; application of accounting principles to legal problems.

270 *Legislation* (2)

Davison, Mallison

Fall—evening; summer 1958.

The legislative process, with particular emphasis on its operation in federal and state governments; legislative organization and procedure; statutory interpretation.

274 *Taxation: Federal Estate and Gift* (2)

Hambrick

Fall—morning and evening.

A survey of the substantive provisions of the federal estate and gift tax laws, including inter vivos transfers, transfers in contemplation of death, joint interests, life insurance proceeds, property subject to powers of appointment, the marital deduction and split gifts; tax procedure.

279 *Taxation: Federal Income* (4) Hambrick

Spring—morning and evening.

A study of the federal income tax, including construction of statutes, practice and procedure, and legislative policy.

285 *Trusts and Estates* (4) Weaver, Young

Fall—morning and evening; summer 1958.

Formalities of execution of wills; problems of construction, revocation, contest; limits on testamentary power; intestate succession. Creation of trusts, inter vivos and testamentary; administration of decedents' estates and trust estates.

295 *Unfair Trade Practices* (4) Weston

Fall—morning and evening.

Unfair trade practices at common law and under statutes; trademarks, trade names; copyright law; misappropriation of ideas; protection of competitors and consumers against false advertising under Federal Trade Commission Act; resale price maintenance under state Fair Trade Acts; miscellaneous business practices.

THIRD YEAR

300 *Admiralty* (2) Davis

Spring—evening.

Federal and state jurisdiction; jurisdiction over waters, craft, contracts, torts, crimes, in equitable matters, etc.; laws applicable to maritime workers and maritime liens.

303 *Aviation Law* (2)

Not offered 1958–59.

Procedure before Civil Aeronautics Board; legal problems arising in connection with air transportation and airports, international conventions and organizations.

307 *Comparative Law* (4) ————

Fall—evening.

The Civil Law System; general introduction to foreign law as exemplified by Roman Law and the modern French Law; comparative study of administration of justice, legal institutions, and methods for international law practice and working with foreign lawyers.

309 *Conflict of Laws* (4) Collier, Dixon

Fall—morning and evening; summer 1958.

Study of cases involving foreign elements; principles of jurisdiction and limitations upon its exercise; procedure, torts, workmen's compensation, contracts, property, family law, administration of estates, business associations.

313 *Constitutional Interpretations* (2)

Not offered 1958–59.

Advanced course in constitutional law. The Constitution and constitutional tradition; doctrines of limited government, separation of powers, implied limitations on legislative power, and significance of "due process" in current constitutional developments. Introduction to comparative constitutional law, with studies in the constitutional law of selected states of the Union.

318 *Creditors' Rights* (4)

Not offered 1958–59.

Remedies of unsecured creditors; judgments, fraudulent conveyances, creditors' agreements, equity and statutory receiverships, and bankruptcy. The general approach is that of law administration.

Weston

321–22 *Current Decisions* (2–2)

Academic year—morning and evening.

Required of, and limited to, members of the student staff of the *Law Review*.

Weston

330 *Federal Antitrust Laws* (4)

Spring—evening.

Restraints of trade at common law and under Sherman Antitrust Act of 1890, Federal Trade Commission and Clayton Acts by mergers, monopolies, price-fixing agreements, trade associations, exclusive-dealing agreements, tie-in sales, and trade boycotts; patents and copyrights under antitrust laws.

335 *Jurisprudence* (2)

Fall—evening; spring—morning.

History of jurisprudence; schools of jurists, particularly the nineteenth century schools; sociological jurisprudence; theories of justice; the nature of law; law and morals; law and the state; the scope and subject matter of law; sources and forms of law; the traditional element; analysis of general legal concepts.

Merrifield

339 *Labor Arbitration* (2)

Fall—evening.

Labor arbitration and collective bargaining; role of the lawyer in negotiation and administration of collective labor agreements; practices, procedures, and substantive issues in labor arbitration.

341 *Labor Standards and Social Security Legislation* (2)

Not offered 1958–59.

Legal problems arising under federal and state statutes dealing with labor standards and social security. Particular emphasis is placed upon the regulation of wages and hours, workmen's compensation, and insurance against unemployment and old age.

345 *Legislative Drafting* (2) Zinn

Fall—evening.

Advanced instruction and practice in legislative drafting.

349 *Local Government Law* (2) Mallison

Spring—morning and evening.

Types and objectives of city, county, and special function local governmental units; intergovernmental relations; original organization and changes; local lawmaking; community planning and development.

355 *Mortgages* (2) Orentlicher

Fall—evening; summer 1958.

Security interests in real property, their creation, transfer, enforcement, and extinguishment.

359 *Patent Law I** (2) Robillard

Fall—evening.

Origin and nature of patents, patentable subject matter, classes of patents, novelty, utility, invention, patent claims and their interpretation, acts constituting infringement, correction of patents.

360 *Patent Law II* (2) Harris

Spring—evening.

Lectures and discussion: licensing and protection of industrial property; uses and abuses of patents; governmental regulation; protection abroad; economic and social functions of patents, trade-marks, and copyrights. Prerequisite: Law 359.

362 *Patent Office Practice** (2) Rose

Spring—evening.

Rules and practice; appeal and interference procedure.

365–66 *Patent Trial Practice Court** (2–2) Brown, Federico

Academic year—evening.

Practice before the United States Court of Customs and Patent Appeals and the federal courts. Prerequisite: forty-two semester hours, including Law 215 and 240. Law 359, which is also required, may be taken concurrently.

This course may be elected instead of Law 385–86 to satisfy the Trial Practice Court requirement.

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* Patent law students should take Law 359 and Law 365 concurrently in the fall semester and Law 362 and Law 366 concurrently in the spring semester.

Fryer

370 *Public Utilities* (2)

Fall—morning and evening.

Regulation by federal, state, and municipal authorities concerned with licensing, rates, services, and practices, with emphasis on federal regulation of interstate operations; judicial review.

Orentlicher, Mayo

376 *Restitution* (2)

Spring—morning and evening; summer 1958.

Remedies at law and in equity for restitution of benefits conferred, especially as based on the concept of unjust enrichment.

Orentlicher

380 *Suretyship* (2)

Summer 1958.

The law of suretyship, especially in the context of accommodation credit and commercial and financial practices, with attention also to informal and nonconsensual suretyship relations and the place of suretyship principles in the solution of legal problems generally.

Edgerton, Myers, Jackson, Herrick,
Monk, Walsh, Kendrick, Skinker

385–86 *Trial Practice Court* (2–2)

Academic year—morning and evening.

Trial of assigned cases; trial tactics and techniques; pre-trial and court room procedures pursuant to Federal Rules.

To be taken in the senior year. Prerequisite: forty-two semester hours, including Law 215 and 240.

391 *World Law* (2)

Not offered 1958–59.

International organization; the legal aspects of the United Nations; international constitutional law.

GRADUATE COURSES

Davison

401 *Administrative Law Seminar* (2)

Fall—evening.

Group study of specific problems in administrative law.

408 *Constitutional Law Seminar* (2)

Spring—evening.

Group study of contemporary problems in constitutional law.

412 *Control and Use of Atomic Energy* (2)

Not offered 1958–59.

Various legal problems involved in the control and use of atomic energy will be examined, including the Atomic Energy Act, the policy underlying the present government monopoly, the security problem of safeguarding atomic military information, the implications in prospective industrial control and use, and legal means of protecting personal interests against the possible consequences of atomic warfare.

416 *Criminal Practice and Administration* (2) Cooper

Spring—as arranged.

Group study of the fundamental aspects of criminal procedure with special reference to practice before the District of Columbia and federal courts; the law of arrest, searches and seizures, self-incrimination, the function of the preliminary examination and grand jury, sufficiency of indictments, trial procedure, and the order of pleas and motions. Registration limited to fifteen students.

420 *Estate Planning Seminar* (2) Weaver

Spring—evening.

Group study of the effective disposition of wealth, inter vivos and testamentary gifts, conservation for owner's future use, use of insurance, tax and administrative problems, business interests, pension and profit-sharing arrangements.

424 *Evidence and Trials Seminar* (2) Fryer

1959–60 and alternate years.

Study of selected problems involving presentation of documentary proof and expert testimony in connection with the reforms sought by the Uniform Rules of Evidence and recent developments in the field of forensic medicine.

428 *Food and Drug Law* (2) Goodrich, Kleinfeld

Spring—evening.

A lecture and discussion course dealing with the Federal Food, Drug, and Cosmetic Act and governmental controls thereunder. Both government and industry viewpoints are considered.

431 *Government Contracts I* (2) McIntire

Fall—evening.

A consideration of the basic power of the Federal Government to enter into contracts; the nature and construction of such contracts; normal and war or defense powers aspects of government procurement, including administrative and legislative policy and procedures; forms of contracts; standard clauses; advertised bid procedure problems; negotiated contracts; modification of contracts; remedies on contractual claims.

432 *Government Contracts II* (2) McIntire

Spring—evening.

Special problems in government contracts, including adjustments and relief; procedure for prosecuting claims under government contracts; attempts at price, cost, or profit control; termination.

437 *International: Comparative Law Seminar* (2)

Not offered 1958–59.

Group study of contemporary problems in international and comparative law.

442 *Labor Law Seminar* (2)

Not offered 1958–59.

Group study of contemporary problems in labor law.

Dach

446 *Law of Money and Monetary Obligations* (2)

Not offered 1958–59.

Introductory survey of the provisions of public law by which money is administered, relating particularly to the Federal Reserve System; the legal character of money and of monetary obligations; legal tender; the "dollar-for-dollar" rule and its limitations; protective clauses (gold, commodity, and index clauses). Particular emphasis will be given to the law relating to foreign money.

Liebesny

449 *Law of the Near East* (2)

1959–60 and alternate years.

A study of the law of the Arab countries, including the basic principles of the Islamic law, an analysis of the present day codes, and an investigation of the Western influences on the laws of the Arab countries.

455 *Legal Problems in Modern Methods of Warfare* (2)

Not offered 1958–59.

The contemporary international law of war: legal aspects of modern methods of coercion (economic, political, psychological, and military); regulation of hostilities; the special problems of atomic, bacteriological, and chemical weapons; war crimes.

459 *Military Law and Jurisdiction* (2)

Not offered 1958–59.

Sources of military jurisdiction; military law proper, including court-martial jurisdiction and procedures before, during, and after trial; military government; martial law; laws of war and treatment of offenders.

Mayo

463 *Regulation of Communication Media* (2)

Spring—evening.

An examination of the legal doctrine relating to regulatory practices in the channels of mass communications, i.e., newspapers, motion pictures, and radio-television; analysis of the operational structure of the mass media and the pattern of control exercised by government, private associations, and various community groups; appraisal of the comparative utility of various regulatory techniques for implementing policies affecting these media; special emphasis will be placed on the functions of the Federal Communications Commission.

466 *Regulation of Securities and Securities Markets* (2) Kroll

Fall—evening.

A study of state and federal laws governing the offering and distribution of securities to the public by corporate issuers and others, the regulation of securities markets, and the rights and liabilities of purchasers under such statutes. Particular emphasis will be given to statutes administered by the Securities and Exchange Commission.

469 *Research in Patent, Trade-Mark, and Copyright Law* (2) Harris

Fall—as arranged; spring—as arranged.

Registration is limited to students who have taken Patent Law I and II and related courses including, as a rule, Trade Regulation Seminar, and who have at least a *B* average. A request in writing, with a proposed outline of the topic of research, must be submitted to the Dean at least one month prior to registration day. Registration is permitted for one semester only and the work must be completed within the semester.

471 *Research in Public Law* (2) The Staff

Fall—as arranged; spring—as arranged.

Registration is limited to students who have previously had a seminar or comparable course in the field of the proposed research and who have at least a *B* average. A request in writing, with a proposed outline of the topic of research, must be submitted to the Dean at least one month prior to registration day. Registration is permitted for one semester only and the work must be completed within the semester.

475 *Taxation: Corporate* (2) Hambrick

Spring—evening.

Case law and 1954 Internal Revenue Code provisions applicable to corporations; analysis of corporate distributions and liquidations, redemptions of stock, reorganizations and mergers; collapsible corporations, organization of corporations, sales of business enterprises; personal holding companies, accumulated earnings tax, and carry-overs.

480 *Taxation: Oil and Gas* (2) Hambrick

Spring—evening.

A study of the case law relating to percentage depletion, sales and transfers of interests in oil and gas properties; legal aspects of financing methods in oil and gas operations; application of partnership and corporation provisions of the 1954 Internal Revenue Code to oil and gas activities.

Hambrick

485 *Taxation Seminar* (2)

Fall—evening.

Selected problems in federal income, estate, and gift taxation, involving factual analysis and legal research, and the preparation of memoranda of law, legislative drafting or other appropriate disposition. Registration subject to approval of instructor.

492 *Trade Regulation Seminar* (2)

Not offered 1958–59.

Group study of current problems relating to unfair trade practices and federal antitrust laws.

Orentlicher

495 *Urban Redevelopment* (2)

Fall—evening.

Selected problems in urban redevelopment and housing, with particular emphasis on programs under current federal and state legislation.

MATHEMATICS

James Henry Taylor, Ph.D., *Professor Emeritus of Mathematics in Residence*

Francis Edgar Johnston, Ph.D., *Professor of Mathematics*
Florence Marie Mears, Ph.D., *Professor of Mathematics*
Isidor Heller, Ph.D., *Professorial Lecturer in Mathematics*
Nels David Nelson, Ph.D., *Associate Professor of Mathematics, Executive Officer*
Louis William Tordella, Ph.D., *Associate Professorial Lecturer in Mathematics*
Daniel Maccabaeus Dribin, Ph.D., *Associate Professorial Lecturer in Mathematics*
Earl Larkin Williams, A.M., *Lecturer in Mathematics*
——————————, *Instructor in Mathematics*

Bachelor of Arts or *Bachelor of Science with a major in Mathematics (Columbian College—Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 68 and 69.

Required: in addition to the general requirements of Columbian College as stated on pages 82–88, fifteen semester hours of Mathematics of approved second- and third-group courses.

Master of Arts or *Master of Science in the field of Mathematics (Columbian College).*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Mathematics at this University, or the equivalent.

Required: the general requirements of Columbian College as stated on pages 89–92.

Doctor of Philosophy (Graduate Council).—See page 98.

Bachelor of Science in Engineering with an option in Mathematics (School of Engineering).—For requirements see pages 138–41 and 143–44.

Bachelor of Arts in Education with a teaching field in Mathematics (School of Education).—Prerequisite: the Education curriculum in the Junior College, page 70.

Required: the Mathematics option, page 169, and the professional courses listed on page 171.

First Group[*]

3 *College Algebra* (3) The Staff

Fall—morning and evening; spring—morning and evening; summer 1958.

Exponents and logarithms; linear equations; complex numbers; quadratic equations; introduction to theory of equations; mathematical induction and the binomial theorem; permutations, combinations, and probability; determinants; progressions. Prerequisite: one year each of high school algebra and high school geometry.

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[*] No first-group course in mathematics is available for college credit if the student's previous training in mathematics meets the prerequisite for a higher numbered course.

The Staff

6 *Plane Trigonometry* (3)

Fall—morning and evening; spring—morning and evening; summer 1958.

Prerequisite: two years of high school algebra and one year of high school geometry, or Mathematics 3 (or concurrent registration therefor).

The Staff

12 *Analytic Geometry* (3)

Fall—morning and evening; spring—morning and evening; summer 1958.

Prerequisite: Mathematics 3 and 6, or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry.

The Staff

19 *Differential Calculus* (3)

Fall—morning and evening; spring—morning and evening; summer 1958.

Prerequisite: Mathematics 12.

The Staff

20 *Integral Calculus* * (3)

Fall—morning and evening; spring—morning and evening; summer 1958.

Prerequisite: Mathematics 19.

Nelson

SECOND GROUP*

102 *Fundamental Concepts of Mathematics* (3)

1959–60 and alternate years.

The Staff

103 *Calculus and Differential Equations* (3)

Fall—morning and evening; spring—morning and evening; summer 1958.

The Staff

112 *Mathematics for Engineers and Scientists* (3)

Fall—morning and evening; spring—morning and evening; summer 1958.

Topics from advanced calculus, partial differential equations, vector analysis, and complex variables. Prerequisite: Mathematics 103 or 132.

The Staff

123 *Theory of Equations* (3)

Fall—morning.

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* Mathematics 20 is prerequisite to all second-group courses.

125 *Advanced Algebra* (3) Johnston
Fall—evening.

126 *Advanced Analytic Geometry* (3)
Not offered 1958–59.

132 *Differential Equations* (3) The Staff
Spring—morning.

134 *Introduction to Boundary Value Problems* (3) Taylor
Fall—evening.
Prerequisite: Mathematics 103 or 132.

135 *Projective Geometry* (3) Heller
Spring—evening.

139 *Advanced Calculus* (3) Mears
Fall—evening.

140 *Introduction to Analysis* (3) Mears
Spring—evening.
Prerequisite: Mathematics 139.

141 *Introduction to Infinite Series* (3) Mears
Fall—evening.

167 *Fourier Series and Spherical Harmonics* (3)
Not offered 1958–59.
Prerequisite: Mathematics 103 or 132.

171 *Vector Analysis* (3) Taylor
Spring—evening; summer 1958.

THIRD GROUP

202 *Mathematical Logic* (3) Nelson
1959–60 and alternate years.

220 *Theory of Numbers* (3)
Not offered 1958–59.

237–38 *Theory of Functions* (3–3) Johnston
A year course: credit is not given for the first half until the second half is completed.
1959–60 and alternate years.

242 *Infinite Series* (3) Mears

Spring—evening.

243–44 *Numerical Analysis* (3–3) The Staff

1959–60 and alternate years.

Prerequisite: Mathematics 103 or 132.

249 *Ordinary Differential Equations* (3)

Not offered 1958–59.

250 *Integral Equations* (3)

Not offered 1958–59.

251–52 *Theory of Functions of a Real Variable* (3–3) Nelson

A year course: credit is not given for the first half until the second half is completed.

Academic year—evening.

255 *Differential Geometry* (3) Taylor

Spring—evening.

257 *Theory of Groups* (3)

Not offered 1958–59.

265–66 *Modern Algebra* (3–3) Johnston

Academic year—evening.

268 *Calculus of Variations* (3)

Not offered 1958–59.

270 *Tensor Analysis* (3)

Not offered 1958–59.

277 *Partial Differential Equations* (3) Taylor

Fall—evening.

278 *Introduction to Topology* (3) Heller

Fall—evening.

295–96 *Reading and Research* (3–3) The Staff

Academic year—as arranged.

299–300 *Thesis* (3–3) The Staff

MECHANICAL ENGINEERING

Benjamin Carpenter Cruickshanks, B.S. in M.E., *Professor Emeritus of Mechanical Engineering in Residence*

Paul Arthur Crafton, B.M.E., Ph.D., *Associate Professor of Mechanical Engineering*
George Calvin Weaver, M.S., *Associate Professor of Mechanical Engineering*
Philip Sidney Morgan, Jr., B.S., M.S. in M.E., *Assistant Professor of Mechanical Engineering*
Albert Christian Murdaugh, B.S., M.S. in Met.E., *Assistant Professor of Mechanical Engineering*
Robert William Pinnes, M.M.E., *Lecturer in Mechanical Engineering*
Irving Korobkin, B.M.E., M.S. in M.E., *Lecturer in Mechanical Engineering*
Martin Garstens, M.S., Sc.D., *Lecturer in Engineering*
Raphael David Cahn, B.M.E., *Lecturer in Mechanical Engineering*
Frank Joseph Powell, M.S., *Lecturer in Mechanical Engineering*
Leo Shanley Straw, B.S. in C.E., *Associate in Mechanical Engineering*

Bachelor of Mechanical Engineering (School of Engineering).—See pages 138–41 and 142–43 for statement of requirements.

Master of Science in Engineering (School of Engineering).—See pages 144–47 for statement of requirements.

First Group

3–4 *Graphical Communication I–II* (2–2) The Staff

Academic year—morning, afternoon, and evening.

Spatial visualization and drawing, perspective, free-hand drawing, views in space, schematic diagrams, curves and curve fitting, descriptive geometry. Drafting-room fee, $10 a semester.

5 *Orientation and Engineering Problems* (2) Cruickshanks

Fall—morning, afternoon, and evening; spring—morning and evening.

Open to freshmen only. Orientation in college. Introduction to slide rule, engineering logic and ethics, engineering method of analysis, proper methods of study and work. Simple problems in engineering.

6 *Engineering Problems** (2) Cruickshanks

Spring—morning and evening; summer 1958.

Simple engineering problems in statics, dynamics, energy, heat and electricity. Training in reasoning, engineering analysis, and application of mathematics to engineering problems. Prerequisite: Mechanical Engineering 5; removal of all entrance deficiencies in science and mathematics.

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* This course should be completed before the beginning of the sophomore year.

Cahn

14 *Analytical Kinematics* (3)

Spring—morning and evening.

Analytical study of constrained motion of rigid bodies and their combinations; including bar linkages, cams, and gears. Prerequisite: Physics 6, Mechanical Engineering 4 and 6. Prerequisite or concurrent registration: Mathematics 103.

Weaver

SECOND GROUP

113 *Theoretical Thermodynamics I* (3)

Fall—morning and evening.

Fundamental concepts, equations of state, first and second laws of thermodynamics, entropy, single and two-phase mixtures. Prerequisite: Chemistry 12, Mathematics 20, Physics 8.

Weaver

114 *Theoretical Thermodynamics II* (3)

1958–59 and alternate years: spring—evening; 1959–60 and alternate years: spring—morning and evening.

Vapor cycles, combustion, gas dynamics, equilibrium, multiphase mixtures. Prerequisite: Mechanical Engineering 113, Mathematics 112. Prerequisite or concurrent registration: Civil Engineering 132, Mechanical Engineering 118.

Weaver

118 *Heat Transfer* (3)

Spring—morning and evening.

Heat transfer theory, conduction, convection, radiation, field and potential theory applied to conduction. Lecture and laboratory. Laboratory fee, $10. Prerequisite: Mechanical Engineering 113, Mathematics 112.

Murdaugh

120 *Physical Metallurgy* (3)

1958–59 and alternate years: spring—morning; 1959–60 and alternate years: spring—evening.

Physics of metals, crystal and lattice structures, binary and ternary alloys, properties of alloys, nonequilibrium conditions, phase diagrams. Prerequisite: Mathematics 20, Civil Engineering 125.

Crafton

123 *Advanced Dynamics* (3)

1958–59 and alternate years: fall—evening; 1959–60 and alternate years: fall—morning and evening.

Dynamics of a particle and systems of particles; dynamics of a system with constraints, vibration, shock; the gyroscope. Prerequisite:

Mathematics 112, Civil Engineering 121, Electrical Engineering 11, Mechanical Engineering 14. Prerequisite or concurrent registration: Civil Engineering 157.

135–36 *Heat Power Engineering* (3–3) ________

1958–59 and alternate years: academic year—evening; 1959–60 and alternate years: academic year—morning and evening.

Analysis and design principles governing systems and components in heat-power, gas and vapor turbines, internal combustion engines, heat pumps, nuclear power systems. Lecture and laboratory. Laboratory fee, $15 a semester. Prerequisite: Physics 191, Civil Engineering 132, Mechanical Engineering 114, 118. Prerequisite or concurrent registration: Mechanical Engineering 139.

139 *Fluid Machinery* (3) Mason

1958–59 and alternate years: fall—evening; 1959–60 and alternate years: fall—morning and evening.

Positive-displacement machines; hydraulic circuits and servomechanisms; general theory of dynamic machines; velocity diagrams and work transfer; radial, axial, and mixed-flow machines; torque converters and couplings; jet machines. Lecture and laboratory. Laboratory fee, $10. Prerequisite: Civil Engineering 132, Mechanical Engineering 113. Prerequisite or concurrent registration: Mechanical Engineering 123.

143 *Production Engineering* (3) Cole

1958–59 and alternate years: fall—morning; 1959–60 and alternate years: fall—morning and evening.

Principles of production engineering, programming, production methods, quality control, automation, operations analysis. Prerequisite: Mechanical Engineering 14, 120; Mathematics 112.

146 *Dynamics of Compressible Fluids* (3) Crafton

1958–59 and alternate years: spring—evening; 1959–60 and alternate years: spring—morning.

Mathematical theory of compressible fluid flow, flow around immersed bodies, airfoil theory, shock-wave theory, thermodynamics of compressible fluids. Laboratory fee, $10. Prerequisite: Mechanical Engineering 118, Civil Engineering 132.

148 *Machine Analysis and Synthesis* (3) Crafton

1958–59 and alternate years: spring—morning; 1959–60 and alternate years: spring—evening.

Analysis and synthesis of machine components and of complete machines, relations of machine and system, applications of automatic control. Prerequisite: Electrical Engineering 12, Mechanical Engineering 123, 135, 139, 143. Prerequisite or concurrent registration: Engineering Science 154.

Third Group*

211 *Thermodynamics* (3)

Fall—as arranged; spring—as arranged.

Reversible and irreversible processes, equilibrium, ideal and van der Waal's gases, dilute solutions, phase equilibria, electric and magnetic effects, radiation. Introduction to kinetic theory and statistical mechanics.

213 *Heat Transfer* (3)

Spring—as arranged.

Physical and mathematical concepts of heat transfer phenomena under steady and unsteady conditions, including: Stefan-Boltzmann and Planck laws for radiation. Fourier heat equation for conduction, dimensional analysis, and boundary layer theory for convection.

215 *Gas Dynamics* (3)

Spring—as arranged.

Theory of gas dynamics including: combustion, shock phenomena, dynamics of flow, and heat transfer for high temperature gases.

Crafton

233 *Supersonic Flow and Shock Waves* (3)

Spring—as arranged.

Thermodynamics of one-dimensional compressible fluid flow in nozzles and jets, two-dimensional waves and shocks (plane flow and airfoils), three-dimensional flow around slender bodies of revolution and cones, three-dimensional wing theory, blast waves.

ENGINEERING ADMINISTRATION

Jack Edward Walters, M.S. in M.E., Ph.D., *Professor of Engineering Administration*

Gilbert Chester Jacobus, B.S. in C.E., M.B.A., LL.B., *Professorial Lecturer in Engineering Administration*

Nathaniel Stewart, M.S., Ed.D., *Professorial Lecturer in Engineering Administration*

Frank Miller Reynolds, LL.M., B.S., *Professorial Lecturer in Eng*
neering Administration

Robert James Wilson, A.M., Ed.D., *Professorial Lecturer in Engineer*
ing Administration

Franklin Porter Hall, Ph.D., *Professorial Lecturer in Engineering Ad*
ministration

Keith Cyril Harder, Ph.D., *Professorial Lecturer in Engineering Ad*
ministration

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* Prerequisites for graduate courses are not stated explicitly. Instructors in individual cour
will state prerequisites and may recommend preparatory work to be completed prior to admis
to the course.

Burton Bryant Chandler, M.B.A., *Professorial Lecturer in Engineering Administration*

Kenneth Seymour Colmen, B.A.E., Ph.D., *Professorial Lecturer in Engineering Administration*

Frederick Charles Dyer, M.B.A., *Professorial Lecturer in Engineering Administration*

John Kaye, M.S. in M.E., *Associate Professor of Engineering Administration*

Boone Doudy Tillett, LL.B., M.S., Sc.D., *Associate Professor of Engineering Administration*

Harold Jefferson Mills, Jr., M.B.A., *Associate Professor of Engineering Administration*

Master of Engineering Administration.—See pages 144–45, 147–48.

The School of Engineering offers the following courses primarily for candidates for the degree of Master of Engineering Administration. Other courses listed in this program are offered by the departments of Accounting, Business and Public Administration, Geography, Psychology, and Statistics.

SECOND GROUP

191 *Engineering Law** (3) Tillett

Fall—evening.

The influence of contract, property, and tort law upon engineering activities. Legal principles relating to the organization and management of engineering companies and governmental departments; legal procedures of interest to engineers. Topics considered include contracts, agency, partnership, corporations, liens, and expert testimony.

THIRD GROUP

201 *Engineering Administration I* (3) Walters and Staff

Fall—evening; spring—evening; summer 1958.

Application of scientific method to the administrative processes of (1) planning and (2) organizing; including development of objectives, key factors in planning, basics of organization, stages of organizational growth, special problems of organization in an engineering or scientific enterprise, and management development.

202 *Engineering Administration II* (3) Walters and Staff

Fall—evening; spring—evening.

Continuation of Engineering Administration 201. Application of scientific method to the administrative processes of (3) managing or directing and (4) evaluation and control. Study of delegation; decentralization; personnel relations; systems engineering; automation; financial analysis, budgeting, and administrative audits.

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* An undergraduate course which may be taken for graduate credit with approval of the Committee on Graduate Studies.

Walters, Wilson

205 *Engineer and Society* (3)

Spring—evening.

Role of the engineer and the engineering profession in society; the influence of humanities in engineering and scientific activities; and the relationship of engineering to the community, state, nation, and the world. Case studies by the student are required.

Dyer

211 *Communication of Ideas* (3)

Fall—evening.

The principles and practices of factual technical communication; reports, administrative memoranda, and articles for publication; the selection of content, and preparation of material for readers of different orientations and capabilities.

Dyer

212 *Methods and Materials of Professional Communication* (3)

Spring—evening.

Effective use of materials in oral communication of professional ideas, covering: engineering, industry, and engineering-government relationship.

Colmen

251 *Management of Research and Development* (3)

Fall—evening.

Management problems involved in the administration of research and development programs; exploration of techniques in programming selection of organizations for research, maintenance, control, and evaluation of projects. Prerequisite: Engineering Administration 202, or permission of instructor.

Tillett

252 *Production and Maintenance Management* (3)

Fall—evening; spring—evening.

Managerial implications of automation. Study of skills and abilities essential to industrial management, including maintenance of equipment and real property. Prerequisite: Engineering Administration 202, or permission of instructor.

Tillett, Hall

261 *Economic Analysis in Engineering Planning* (3)

Fall—evening; spring—evening.

Application of economic principles to engineering administration: inputs, outputs, investments, and prices. Studies are made of the methods of analyzing economic factors in evaluating alternate courses of administrative action in government and industry.

263 *Quantitative Techniques of Engineering Administration* (3) Kaye

Not offered 1958–59.

Application of the various quantitative techniques, mathematical, statistical, and other management sciences' techniques to the analysis of engineering administration and the solution of administrative problems by the use of models, theories, and measurements.

271 *Operations Research* (3) Kaye and Staff

Fall—evening; spring—evening.

Background and application of operations research; history, characteristics, capabilities, administrative considerations, cases, methods, and techniques, including construction of conceptual and mathematical models.

272 *Problems in Operations Research* (3) Kaye

Spring—evening.

Illustrations of the application of operations research by study of case histories: examples of the formulation and preliminary order-of-magnitude case; examples of broader scope. Prerequisite: Engineering Administration 271, or permission of the instructor.

273–74 *Techniques of Operations Research* (3–3) Kaye and Staff

Academic year—evening.

Theory and application of techniques used in operations research, including order-of-magnitude estimation, probability and mathematical statistics, symbolic logic, inequality-constrained stationary-value problems, dynamics of populations, Monte Carlo simulation, strategic gaming, and error and sensitivity analysis. Prerequisite: Engineering Administration 271, or permission of the instructor.

290 *Problems in Engineering Administration* (3) Kaye and Staff

Fall—evening; spring—evening.

Application of the scientific method to engineering administrative problems; the selection and development of the Master's Problem.

291 *Master's Problem in Engineering Administration* (3) Kaye and Staff

Fall—evening; spring—evening.

Experimentation and proof of the Master's Problem solution. Preparation for presentation of the problem in written form.

295 *Applied Research in Engineering Administration* (arr.)

The Staff

Fall—as arranged; spring—as arranged.

Application of established principles to new engineering administrative situations; the development of new knowledge of administration.

296 *Research in Engineering Administration* (arr.)

The Staff

Fall—as arranged; spring—as arranged.

Creative thinking in engineering administration, initiation of new theories and principles, development of new hypotheses, experimentation, proof of theories and hypotheses.

MEDICINE

Thomas McPherson Brown, A.B., M.D., *Eugene Meyer Professor of Medicine, Executive Officer*
Monroe James Romansky, A.B., M.D., *Professor of Medicine*
Charles Robert Lee Halley, A.B., M.D., *Clinical Professor of Medicine*
Clayton Bernard Ethridge, M.D., *Clinical Professor of Medicine*
Louis Katz Alpert, B.S., M.D., *Clinical Professor of Medicine*
Sol Katz, B.S., M.D., *Professorial Lecturer in Medicine*
Joseph Francis Fazekas, B.S., M.D., *Professorial Lecturer in Medicine*
Robert William Berliner, B.S., M.D., *Professorial Lecturer in Medicine*
Henry Field, Jr., B.S., M.D., *Professorial Lecturer in Medicine*
John Coleman Nunemaker, M.S., M.D., *Professorial Lecturer in Medicine*
Thomas Hodge McGavack, A.B., M.D., *Professorial Lecturer in Medicine*
John McCallum Evans, A.B., M.D., *Associate Professor of Medicine*
Alvin Edward Parrish, M.D., *Associate Professor of Medicine*
Peter Diacoumis Comanduras, B.S., M.D., M.S. in Med., *Associate Clinical Professor of Medicine*
Clarence Richard Hartman, A.B., M.D., *Associate Clinical Professor of Medicine*
Walter Kendall Myers, B.S., M.D., *Assistant Clinical Professor of Medicine*
John Alton Reed, A.B., M.D., *Assistant Clinical Professor of Medicine*
Theodore Judson Abernethy, B.S., M.D., *Assistant Clinical Professor of Medicine*
William Travis Gibb, A.B., M.D., *Assistant Clinical Professor of Medicine*
Roy Hertz, Ph.D., M.D., *Assistant Clinical Professor of Medicine*
Samuel Ross Taggart, M.D., *Assistant Clinical Professor of Medicine*
Benjamin Manchester, M.D., *Assistant Clinical Professor of Medicine*
Pearl Holly, M.S., M.D., *Assistant Clinical Professor of Medicine*
James Joseph Feffer, A.B., M.D., *Assistant Clinical Professor of Medicine*
Ludwig George Lederer, M.D., Ph.D., *Assistant Clinical Professor of Medicine*
John Eldrid Smith, A.B., M.D., *Assistant Clinical Professor of Medicine*
John Watkins Trenis, A.B., M.D., *Assistant Clinical Professor of Medicine*
Albert David Kistin, A.M., M.D., *Assistant Clinical Professor of Medicine*

Andrew Gabriel Prandoni, B.S., M.D., *Assistant Clinical Professor of Medicine*
Ruth Hechler Wichelhausen, M.D., *Assistant Clinical Professor of Medicine*
Lawrence Elias Putnam, A.B., M.D., *Assistant Clinical Professor of Medicine*
Roy Ernest Albert, A.B., M.D., *Assistant Clinical Professor of Medicine*
Halla Brown, M.D., *Assistant Clinical Professor of Medicine*
Elizabeth Harman Hill, M.D., *Assistant Clinical Professor of Medicine*
Joseph Rall, M.D., Ph.D., *Assistant Clinical Professor of Medicine*
Benjamin Hardy Sullivan, Jr., A.B., M.D., *Assistant Clinical Professor of Medicine*
Maurice Protas, A.B., M.D., *Associate in Medicine*
John Minor, A.B., M.D., *Associate in Medicine*
Lawrence Jay Thomas, B.S., M.D., *Associate in Medicine*
Charles William Ordman, A.B., M.D., *Associate in Medicine*
Benjamin Calloway Jones, Jr., A.B., M.D., *Associate in Medicine*
Richard Bernard Castell, A.B., M.D., *Associate in Medicine*
Myer Harold Stolar, B.S., M.D., *Associate in Medicine*
Sam Thompson Gibson, B.S., M.D., *Associate in Medicine*
Walter Lewis Nalls, M.D., *Associate in Medicine*
Alfred Brigulio, M.D., *Associate in Medicine*
Ralph Bretney Miller, A.B., M.D., *Associate in Medicine*
Thomas Stone Sappington, A.B., M.D., *Associate in Medicine*
Ernest Cotlove, B.S., M.D., *Associate in Medicine*
Thomas James Kennedy, Jr., B.S., M.D., *Associate in Medicine*
Jack Orloff, M.D., *Associate in Medicine*
John Christian Ransmeier, A.B., M.D., *Associate in Medicine*
Samuel Jacob Nathan Sugar, Phar.G., M.D., *Associate in Medicine*
Joseph Ney, B.S., M.D., *Associate in Medicine*
Joseph Beinstein, A.B., M.D., *Associate in Medicine*
Frank Solomon Bacon, B.S., M.D., *Associate in Medicine*
Henry Dunlop Ecker, B.S., M.D., *Associate in Medicine*
Jack Jacob Rheingold, A.B., M.D., *Associate in Medicine*
Irene Gorski Tamagna, M.D., *Associate in Medicine*
John Bayne Marbury, M.D., *Associate in Medicine*
Louis Ross, M.D., *Associate in Medicine*
Frederic Dunbar Chapman, A.B., M.D., C.M., *Associate in Medicine*
John Wilmer Latimer, Jr., M.D., *Associate in Medicine*
Luther Henry Snyder, A.B., M.D., *Associate in Medicine*
Charles Wilson Jones, A.B., M.D., *Associate in Medicine*
Thomas Joseph Pekin, B.S., M.D., *Associate in Medicine*
Robert George Taylor, M.D., *Associate in Medicine*

Charles Waters Thompson, M.D., *Associate in Medicine*
James Walling Long, M.D., *Associate in Medicine*
Eugene Solomen Gladsden, B.S., M.D., *Associate in Medicine*
Maurice Mensh, M.D., *Associate in Medicine*
Arthur Rosenbaum, B.S., M.D., *Associate in Medicine*
Irvin Kerlan, B.S., M.D., C.P.H., *Associate in Medicine*
Virginia Patterson Beelar, A.B., M.D., *Associate in Medicine*
Lester Sylvan Blumenthal, A.B., M.D., M.S. in Med., *Associate in Medicine*
Stanley William Kirstein, B.S., M.D., *Associate in Medicine*
James Francis Ambury, B.S., M.D., *Associate in Medicine*
Robert Norwood Coale, B.S., M.D., *Associate in Medicine*
Israel Kessler, M.S., M.D., *Associate in Medicine*
Francis James Murray, B.S., M.D., *Associate in Medicine*
Edwin Pearson Parker III, B.S., M.D., *Associate in Medicine*
Morris Hirsh Rosenberg, A.B., M.D., *Associate in Medicine*
John William DuChez, M.D., *Associate in Medicine*
Warren Daniel Brill, B.S., M.D., *Associate in Medicine*
Marvin Fuchs, B.S., M.D., *Associate in Medicine*
William Jack Weaver, Jr., A.B., M.D., *Associate in Medicine*
Ruth Boschwitz Benedict, A.B., M.D., *Associate in Medicine*
Harold Martin Silver, A.B., M.D., *Associate in Medicine*
Stewart William Bush, B.S., M.D., *Associate in Medicine*
James Theodore Burns, M.D., *Associate in Medicine*
William Otis Bailey, Jr., M.D., *Associate in Medicine*
Thomas Lees Hartman, A.M., M.D., *Associate in Medicine*
Boris Rabkin, A.B., M.D., *Associate in Medicine*
Morton Harold Rose, M.D., *Associate in Medicine*
Cyril Augustus Schulman, B.S., M.D., *Associate in Medicine*
Louis Aleck Craig, Jr., A.B., M.D., *Associate in Medicine*
Abraham Wolffe Danish, A.B., M.D., *Associate in Medicine*
Milton Gusack, A.B., M.D., *Associate in Medicine*
Adolph Friedman, A.B., M.D., *Associate in Medicine*
Alvin Randolph Sweeney, Jr., A.B., M.D., *Associate in Medicine*
Albert Sjoerdsma, Ph.D., M.D., *Associate in Medicine*
Alvin Seltzer, B.S., M.D., *Associate in Medicine*
Samuel Dennis Loube, A.B., M.D., *Associate in Medicine*
Alfred Baer, A.B., M.D., *Associate in Medicine*
Jack Kleh, A.B., M.D., *Associate in Medicine*
James Irving Boyd, M.D., M.S., *Lecturer in Medicine*
William Robert Felts, Jr., B.S., M.D., *Instructor in Medicine*
George Archibald Kelser, Jr., B.S., M.D., *Instructor in Medicine*
Charles Edward Law, M.D., *Clinical Instructor in Medicine*
Emil Herbert Bauersfeld, A.B., M.D., *Clinical Instructor in Medicine*

Harry Clark Bates, B.S., M.D., *Clinical Instructor in Medicine*
Jeanne Cecile Bateman, A.B., M.D., *Clinical Instructor in Medicine*
George Sharpe, A.B., M.D., *Clinical Instructor in Medicine*
William Lewis, M.D., *Clinical Instructor in Medicine*
Edward Luke Rea, A.B., M.D., *Clinical Instructor in Medicine*
James Packard Mann, M.D., *Clinical Instructor in Medicine*
Maurice Arthur Sislen, A.B., M.D., *Clinical Instructor in Medicine*
William Holmes Crosby, Jr., A.B., M.D., *Clinical Instructor in Medicine*
Joseph Hicks Watson, B.S., M.D., *Clinical Instructor in Medicine*
Conrad Gossels, M.D., *Clinical Instructor in Medicine*
Charles Joseph Savarese, Jr., A.B., M.D., *Clinical Instructor in Medicine*
James Eliot Chapman, M.D., *Clinical Instructor in Medicine*
Bernard Robert Cooperman, A.B., M.D., *Clinical Instructor in Medicine*
Marshall Hannis Jacobson, A.B., M.D., *Clinical Instructor in Medicine*
Gottfried Karl Duschak, M.D., *Clinical Instructor in Medicine*
Norman Hartley Rubenstein, M.D., *Clinical Instructor in Medicine*
Howard Otis Mott, A.B., M.D., *Clinical Instructor in Medicine*
Max Gimble Sherer, M.S., M.D., *Clinical Instructor in Medicine*
Jesse Leonard Steinfeld, B.S., M.D., *Clinical Instructor in Medicine*
Donald Morgan Watkin, A.B., M.D., *Clinical Instructor in Medicine*
Edward Adelson, B.S., M.D., *Clinical Instructor in Medicine*
Gerald John Fisher, A.B., M.D., *Clinical Instructor in Medicine*
William Leete Stone, A.B., M.D., *Clinical Instructor in Medicine*
Ted Clemens, Jr., B.S., M.D., *Clinical Instructor in Medicine*
Jacob Robbins, A.B., M.D., *Clinical Instructor in Medicine*
Bernard Howard Ostrow, A.B., M.D., *Clinical Instructor in Medicine*
James Charles Mandes, A.B., M.D., *Clinical Instructor in Medicine*
Irene I-Lien Hsu Siu, B.S., M.D., *Clinical Instructor in Medicine*
Charles David Cooper, A.B., M.D., *Clinical Instructor in Medicine*
Bertle Nelson, A.B., M.D., *Clinical Instructor in Medicine*
Robert Reid Belton, A.B., M.D., *Clinical Instructor in Medicine*
Robert Lynwood Howard, A.B., M.D., *Clinical Instructor in Medicine*
Walter Kurland, B.S., M.D., *Clinical Instructor in Medicine*
Edward Joseph Leonard, M.D., *Clinical Instructor in Medicine*
Paul Wesley Yost, B.S., M.D., *Clinical Instructor in Medicine*
William Kirkman Billingsley, Jr., A.B., M.D., *Clinical Instructor in Medicine*
Robert Sirkosky Gordon, Jr., A.B., M.D., *Clinical Instructor in Medicine*
Donald Sharp Fredrickson, B.S., M.D., *Clinical Instructor in Medicine*
Sam Chapman Pascoe, A.B., M.D., *Clinical Instructor in Medicine*
Wilfred Russell Ehrmantraut, B.S., M.D., *Clinical Instructor in Medicine*
Jack Crowell, M.D., *Clinical Instructor in Medicine*

David Stanley Davis, A.B., M.D., *Clinical Instructor in Medicine*
Gustave Lennard Gold, B.S., M.D., *Clinical Instructor in Medicine*
Herschel Elroy Richardson, A.B., M.D., *Clinical Instructor in Medicine*
John Whitson Roark, B.S., M.D., *Clinical Instructor in Medicine*
Jerome Harold Epstein, A.B., M.D., *Clinical Instructor in Medicine*
George Cumming Buchanan, A.B., M.D., *Clinical Instructor in Medicine*
Montague Lane, M.D., M.S., *Clinical Instructor in Medicine*
Forest Klaire Harris II, B.S., M.D., *Clinical Instructor in Medicine*
Mary Watt, A.B., M.D., *Clinical Instructor in Medicine*
Audrey Connor, A.B., M.D., *Clinical Instructor in Medicine*

106 *Living Anatomy*

Spring—1 hour a week. The Staff

An introduction to physical diagnosis, with special emphasis on topographical anatomy.

236 *Clinical Microscopy*

Spring—3 hours a week. The Staff

Conferences and studies in the clinical application of laboratory examinations of blood, body fluids, exudates, excreta.

242 *Physical Diagnosis*

Spring—6 hours a week. The Staff

Covers not only theoretical but practical application of principles of physical diagnosis as related to examination of patients.

243–44 *Introduction to Medicine*

Academic year—2 hours a week. The Staff

Lectures covering the principles of internal medicine preparatory to clinical studies and training in the inpatient and outpatient services.

325–26 *Clinical Clerkship*

Eight weeks as arranged during academic year. The Staff

Training with bed patients under individual instruction designed to develop ability in examination of patients and case taking as well as practice in clinical microscopy. D. C. General Hospital.

327–28 *Clinical Pathological Conferences I*

Academic year—1 hour a week. The Staff

Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the Staff. Clinical, laboratory, and necropsy findings are compared.

339–40 *Therapeutic Conferences I* Staff of Medicine and Pharmacology

Academic year—1 hour a week.

Conferences designed to emphasize the application of pharmacological principles to the problems of clinical medicine. University Hospital.

The Staff

349–50 *Medical Conferences*

Academic year—2 hours a week.

D. C. General Hospital.

The Staff

421–22 *Outpatient Clinics*

Six weeks as arranged during academic year.

Individual case studies under personal supervision of the Staff. Daily clinics on current medical problems and seminars stressing physiological aspects of diseases. Individual examinations and instruction in medical specialties. University Hospital.

The Staff

423–24 *Clinical Clerkship*

Six weeks as arranged during academic year.

University, Mt. Alto, and D. C. General hospitals.

The Staff

427–28 *Clinical Pathological Conferences II*

Academic year—1 hour a week.

Continuation of Medicine 327–28.

The Staff

429–30 *Clinical Pathological Conferences III*

Academic year—1 hour a week.

Conferences are held at the University Hospital. Attendance is required of students during their medical clerkships there.

NEUROLOGY AND NEUROLOGICAL SURGERY

James Winston Watts, B.S., M.D., *Professor of Neurological Surgery, Executive Officer*
Harold Stevens, Ph.D., M.D., *Professor of Neurology*
Seymour Solomon Kety, A.B., M.D., *Professorial Lecturer in Neurology*
Hyman David Shapiro, M.D., *Associate Clinical Professor of Neurology*
Robert Henry Groh, B.S., M.D., *Associate Clinical Professor of Neurology*
Jonathan Marshall Williams, M.D., *Assistant Clinical Professor of Neurological Surgery*
James Peter Murphy, B.S., M.D., *Assistant Clinical Professor of Neurological Surgery*
Hugo Victor Rizzoli, A.B., M.D., *Assistant Clinical Professor of Neurological Surgery*
Anatole Stephen Dekaban, M.D., Ph.D., *Assistant Clinical Professor of Neurology*
Paul Chodoff, A.B., M.D., *Assistant Clinical Professor of Neurology*
George Davis Weickhardt, M.D., *Associate in Neurology*
Harvey Ammerman, B.S., M.D., *Associate in Neurological Surgery*
George Joseph Hayes, B.S., M.D., *Associate in Neurological Surgery*
Garrett Michael Swain, M.D., *Clinical Instructor in Neurological Surgery*
Marvin Curtis Korengold, D.D.S., B.S., M.D., *Clinical Instructor in Neurology*
John Thomas Lord, A.B., M.D., C.M., *Clinical Instructor in Neurological Surgery*
Delora Fowler Mott, M.D., *Clinical Instructor in Neurology*
Cosimo Ajmone Marsan, M.D., *Clinical Instructor in Neurology*
Norman Harold Horwitz, A.B., M.D., *Clinical Instructor in Neurological Surgery*
Zack Witten Sanders, A.B., M.D., *Clinical Instructor in Neurology*
Ntinos Myrianthopoulos, Ph.D., *Clinical Instructor in Neurology*

249 *Neurology: Basic*

Fall—1 hour a week. Stevens, Williams

Methods used to study the form and function of the nervous system. Lectures and laboratory demonstrations.

250 *Neurology*

Spring—1 hour a week. Stevens, Shapiro

Introductory lectures on clinical neurology with specimens, lantern slides, and motion pictures.

331 *Neurology and Neurological Surgery* Watts, Stevens

Fall—1 hour a week.

Clinical lectures and demonstrations.

333–34 *Neurology and Neurological Surgery, Clinical Clerkship* Stevens, Williams, Ammerman

In conjunction with Neurology 335–36. Two weeks in rotation as arranged during academic year.

Instruction in history, physical examination, ordinary clinical procedures. Attendance at neurosurgical operations. Six students in rotation. D. C. General Hospital.

335–36 *Neurological Conferences* Stevens and Staff

Clinicopathologic study of specimens from current necropsies one afternoon a week and clinical conference bi-monthly. Six students in rotation. D. C. General Hospital.

431–32 *Neurology and Neurological Surgery Clinic* Shapiro, Rizzoli

Two hours a week for three weeks in rotation as arranged during academic year.

Neurological outpatient clinic. Consultation of staff on ambulatory cases, demonstration of diagnostic procedures, disposition of neuropsychiatric cases, ward rounds. Six students in rotation. University Hospital.

433–34 *Clinical Neurology* Groh

Two hours a week for three weeks in rotation as arranged during academic year.

Neurological inpatient examinations and demonstrations. Six students in rotation. St. Elizabeths Hospital.

OBSTETRICS AND GYNECOLOGY

John Parks, M.S., M.D., *Professor of Obstetrics and Gynecology*

Robert Henry Barter, B.S., M.D., *Professor of Obstetrics and Gynecology, Executive Officer*

Henry Lauran Darner, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*

George Nordlinger, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*

Samuel Mayer Dodek, A.M., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*

James Glover Sites, M.D., *Assistant Professor of Obstetrics and Gynecology*

William Prentiss McKelway, A.B., M.D., *Assistant Professor of Obstetrics and Gynecology*

Jeremiah Keith Cromer, M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*

James Albert Dusbabek, M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*

Clarence Kendall Fraser, Ph.B., M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*

Barton Winters Richwine, M.D., *Associate in Obstetrics and Gynecology*

Floyd Sterling Rogers, B.S., M.D., *Associate in Obstetrics and Gynecology*

Rufus Martin Roll, A.B., M.D., *Associate in Obstetrics and Gynecology*

Caroline Jackson, A.M., M.D., *Associate in Obstetrics and Gynecology*

William Thurston Lady, M.D., *Associate in Obstetrics and Gynecology*

Jed Williams Pearson, Jr., A.B., M.D., *Associate in Obstetrics and Gynecology*

Thomas Miles Leonard, Ph.B., M.D., *Associate in Obstetrics and Gynecology*

Julius Robert Epstein, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Morton Selwyn Kaufman, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Samuel Hazen Shea, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Albert Seymour Bright, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Shirley Sue Martin, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Neel Jack Price, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Roland Essig Bieren, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Alexander LeSueur Russell, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Thomas Ashton Wilson, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Marvin Peace Footer, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Donald Walters, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Joseph Marshall Friedman, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Leon McNeely Liverett, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*

William Hurlbert Cooper, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Peter Soyster, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Howard Pettit Treichler, M.D., *Clinical Instructor in Obstetrics and Gynecology*

James Christopher Walsh, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Dodek, Fraser

254 *Introduction to Obstetrics and Gynecology*

Spring—1 hour a week.

Lectures and demonstrations on the development and physiology of the female reproductive system and the management of normal pregnancy.

Footer

301–2 *Manikin Demonstrations*

One hour a week for eight weeks in rotation as arranged during academic year.

The mechanism of labor and various types of operative delivery demonstrated to sections of the junior class. D. C. General Hospital.

The Staff

337–38 *Obstetrics and Gynecology*

Academic year—2 hours a week.

Lectures and demonstrations on the principles of obstetrics and gynecology.

351–52 *Clinical Clerkship* The Staff

Four weeks during academic year as arranged.

Clerkship with patients, including ward rounds, operating room demonstrations, and weekly clinic. D. C. General Hospital.

439–40 *Clinic in Obstetrics and Gynecology* Parks, Barter, Sites

One hour a week for eight weeks in rotation as arranged during academic year.

Student presentation and discussion of patient problems. Demonstration of equipment used in obstetric and gynecologic practice.

441–42 *Clinical Obstetrics* The Staff

Academic year—as arranged.

Students participate in prenatal and postnatal clinic care, observe the course of labor and deliver patients under supervision, observe and participate in the gynecological clinics and operating rooms of the University and D. C. General hospitals, attend bi-weekly departmental conferences and daily ward rounds in the University and D. C. General hospitals.

443–44 *Clinical Gynecology* The Staff

Eight weeks in rotation as arranged during academic year.

Students observe and participate in the gynecological clinics and operating rooms of the University and D. C. General hospitals.

OPHTHALMOLOGY

Ronald Atmore Cox, A.B., M.D., *Professor of Ophthalmology, Executive Officer*

Ernest Alfred Watson Sheppard, M.D., C.M., *Clinical Professor of Ophthalmology*

Richard Wallace Wilkinson, A.B., M.D., M.S. in Med., *Assistant Clinical Professor of Ophthalmology*

Carmon Robert Naples, B.S., M.D., *Associate in Ophthalmology*

Walter Joseph Romejko, M.D., *Associate in Ophthalmology*

William Paxson Chalfant, Jr., M.D., *Associate in Ophthalmology*

William Joseph Graham Davis, A.B., M.D., *Associate in Ophthalmology*

Robert Edward duPrey, B.S., M.D., *Associate in Ophthalmology*

Robert Day, A.B., M.D., *Associate in Ophthalmology*

Melvin Gustavus Alper, A.B., M.D., *Clinical Instructor in Ophthalmology*

John Henry Gilligan, M.D., *Clinical Instructor in Ophthalmology*

352 *Ophthalmology* The Staff

Spring—one hour a week for sixteen weeks as arranged.

Lecture course presenting aspects of all the principles of ophthalmology.

447 *Clinic* The Staff

Fall—as arranged.

During medical outpatient service, each student is given individual instruction in the ophthalmological aspects of systemic disease. University Hospital.

OTOLARYNGOLOGY

James Jerry McFarland, Jr., B.S., M.D., *Associate Clinical Professor of Otolaryngology, Executive Officer*

Catharine Birch, A.B., M.D., *Assistant Clinical Professor of Otolaryngology*

Jack Louis Levine, M.D., *Assistant Clinical Professor of Otolaryngology*

Morris Edward Krucoff, B.S., M.D., *Associate in Otolaryngology*

Willard Beecher Walters, B.S., M.D., *Associate in Otolaryngology*

Russel Smith Page, Jr., A.B., M.D., *Associate in Otolaryngology*

Joseph Aziz Sabri, A.B., M.D., *Associate in Otolaryngology*

William MacLohon Trible, A.B., M.D., *Clinical Instructor in Otolaryngology*

351 *Otolaryngology*

The Staff

Spring—1 hour a week for fourteen weeks.

Lectures and demonstrations on anatomy, physiology, and diseases of the ear, nose, and throat.

354 *Bronchoscopy*

The Staff

Spring—1 hour a week for two weeks.

A series of lectures on the fundamental principles and the use of instruments, including both the bronchoscope and esophagoscope.

355–56 *Clinic*

The Staff

One and one-half hours a week in rotation as arranged during academic year.

Practical clinical instruction in the diagnosis and treatment of diseases of the ear, nose, and throat. D. C. General Hospital.

PATHOLOGY

Thomas Martin Peery, A.B., M.D., *Professor of Pathology, Executive Officer*
Daniel Leigh Weiss, A.B., M.D., *Clinical Professor of Pathology*
Frank Nelson Miller, Jr., B.S., M.D., *Associate Professor of Pathology*
William Newman, A.B., M.D., *Associate Professor of Pathology*
William Laverne Marsh, B.S., M.D., *Assistant Professor of Pathology*
Lois Irene Platt, A.B., M.D., *Associate in Pathology*

SPECIAL STAFF FOR DEMONSTRATIONS

John Stewart Howe, A.B., M.D., *Associate Clinical Professor of Pathology*
Erving Francis Geever, M.D., Ph.D., *Assistant Clinical Professor of Pathology*
Raymond Georges Gottschalk, B.S., M.D., *Assistant Clinical Professor of Pathology*
Richard Emery Palmer, A.B., M.D., *Assistant Clinical Professor of Pathology*
Lorenz Eugene Zimmerman, A.B., M.D., *Associate in Pathology*
William Francis Enos, A.B., M.D., *Associate in Pathology*
Lester Walter Fix, M.D., *Associate in Pathology*
Charles Barrie Cook, B.S., M.D., *Clinical Instructor in Pathology*
Frederick William Shillinger, B.S., M.D., *Clinical Instructor in Pathology*
Charles Phelps Barnett, M.D., *Clinical Instructor in Pathology*

SPECIAL LECTURERS

Elson Bowman Helwig, B.S., M.D., *Chief, Pathology Division, Armed Forces Institute of Pathology*
Lent Clifton Johnson, B.S., M.D., *Pathologist, Armed Forces Institute of Pathology*

259–60 *Pathology* Peery, Miller

Fall—9 hours a week; spring—3 hours a week.

General pathology of inflammations, degenerations, malformations, and neoplasms. Special pathology of the organs and specific diseases. The laboratory work consists of the gross and microscopic study of diseased tissue. Special emphasis is placed on the interrelationships of the various pathologic changes and their correlation with symptoms and physical signs. The Staff

261–62 *Necropsy*

Academic year—as arranged.

Students are required to attend and assist in the performance of necropsies at the University Hospital.

263–64 *Demonstrations in Pathology* Special Staff

Academic year—1 hour a week.

Gross specimens of representative cases from various hospitals are demonstrated and discussed.

267–68 *Seminars in Pathology* Special Lecturers

Academic year—as arranged.

Advanced lectures are presented as arranged on special topics in pathology.

270 *Forensic Pathology and Medical Jurisprudence* Miller

Spring—1 hour a week.

Forensic pathology, toxicology, chemistry, and immunology. The legal and ethical rights and responsibilities of physicians. Legal problems in medicine.

323–24 *Surgical Pathology I* Weiss

Academic year—1 hour a week.

Weekly conferences are held with the student group assigned to the surgical clerkship, reviewing current surgical specimens.

327–28 *Clinical Pathological Conferences I* The Staff

Academic year—1 hour a week.

Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the Staff. Clinical, laboratory, and necropsy findings are compared.

427–28 *Clinical Pathological Conferences II* The Staff

Academic year—1 hour a week.

Continuation of Pathology 327–28.

429–30 *Clinical Pathological Conferences III* The Staff

Academic year—1 hour a week.

Conferences are held at the University Hospital. Attendance is required of students during the medical clerkship there.

492 *Surgical Pathology II* Newman

Spring—1 hour a week.

A systematic study of the gross and microscopic changes in the organs and tissues commonly removed surgically.

493–94 *Pathology Clerkship (elective)* The Staff

Academic year—as arranged.

A limited number of students receive training in surgical pathology and necropsies in the laboratories of the University Hospital.

PEDIATRICS

Preston Alexander McLendon, B.S., M.D., *Professor of Pediatrics*

Margaret Mary Nicholson, A.B., M.D., *Clinical Professor of Pediatrics*

Edward Lewis, M.D., *Clinical Professor of Pediatrics*

William Staton Anderson, A.B., M.D., *Clinical Professor of Pediatrics*

Robert Harold Parrott, M.D., *Clinical Professor of Pediatrics*

Leroy Edward Hoeck, M.D., *Clinical Professor of Pediatrics*

Joseph Michael LoPresti, B.S., M.D., *Associate Professor of Pediatrics, Acting Executive Officer*

John Augustine Washington, B.S., M.D., *Associate Clinical Professor of Pediatrics*

Reginald Spencer Lourie, B.S., M.D., Med.Sc.D., *Associate Clinical Professor of Pediatric Psychiatry*

Margaret Frances Gutelius, A.B., M.D., *Assistant Professor of Pediatrics*

Mabel Harlakenden Grosvenor, A.B., M.D., *Assistant Clinical Professor of Pediatrics*

Aaron Nimetz, A.B., M.D., *Assistant Clinical Professor of Pediatrics*

George Maksim, M.D., M.S. in Ped., *Assistant Clinical Professor of Pediatrics*

William Allen Howard, A.B., M.D., *Assistant Clinical Professor of Pediatrics*

John Howell Peacock, B.S., M.D., *Associate in Pediatrics*

Maynard Irving Cohen, A.B., M.D., *Associate in Pediatrics*

Mary Katherine Laurence Sartwell, A.B., M.D., *Associate in Pediatrics*

Allan Bertram Coleman, M.D., *Associate in Pediatrics*

Charles Frederick Stiegler, A.B., M.D., *Associate in Pediatrics*

Hugh Gambel Clark, A.B., M.D., *Associate in Pediatrics*

Adrian Recinos, Jr., B.S., M.D., *Associate in Pediatrics*

Robert Edward Martin, M.D., *Associate in Pediatrics*

Charles Richard Webb, B.S., M.D., *Associate in Pediatrics*

William Stark, A.B., M.D., *Associate in Pediatric Psychiatry*

Archibald Rich MacPherson, A.B., M.D., *Associate in Pediatrics*

Thomas Elmer Reichelderfer, B.S., M.D., M.P.H., *Associate in Pediatrics*

Herbert Harold Diamond, M.D., *Clinical Instructor in Pediatrics*

Reginald Henry Mitchell, M.D., *Clinical Instructor in Pediatrics*

Robert Orr Warthen, M.D., *Clinical Instructor in Pediatrics*

Emilie Annabelle Black, B.S., M.D., *Clinical Instructor in Pediatrics*

Robert Harper Anderson, M.D., *Clinical Instructor in Pediatrics*

Warren Godfrey Preisser, A.B., M.D., *Clinical Instructor in Pediatrics*

Sanford Leon Leikin, M.D., *Clinical Instructor in Pediatrics*
Bennett Olshaker, A.B., M.D., *Clinical Instructor in Pediatric Psychiatry*
Harold Taylor Yates, M.D., *Clinical Instructor in Pediatrics*
Roger Bergstrom, M.D., *Clinical Instructor in Pediatrics*
George Joel Cohen, M.D., *Clinical Instructor in Pediatrics*
Milton Sanford Glatt, A.B., M.D., *Clinical Instructor in Pediatrics*
Marvin Irwin Mones, M.D., B.S., *Clinical Instructor in Pediatrics*
Mary Alice Vann Fox, A.B., M.D., *Clinical Instructor in Pediatrics*

SPECIAL LECTURER

Myron Ezra Wegman, A.B., M.D., M.P.H., *Director, Division of Education and Training, Pan American Sanitary Bureau, Regional Office for the Americas of World Health Organization;* Pediatrics

256 *Pediatrics* McLendon and Staff

Spring—2 hours a week.

Lectures on physiology of the newborn, normal behavior, emotional and physical development, infant nutrition, diseases of the newborn, common anomalies and system illnesses of infancy and childhood. Medical School.

357–58 *Clinical Clerkship: General Pediatrics* LoPresti and Staff

Two weeks as arranged during academic year.

Introduction to clinical pediatrics. Emphasis on bedside discussion and group seminars including the newborn. Ward rounds. Five students in rotation. D. C. General Hospital.

359–60 *Clinical Clerkship: Contagious Diseases* LoPresti and Staff

Two weeks as arranged during academic year.

Conferences and bedside discussion on contagious and infectious diseases. Prevention and quarantine measures. Five students in rotation. D. C. General Hospital.

361–62 *Clinical Conferences I* McLendon and Staff

Academic year—1 hour a week.

Required. Presentation and discussion by students of current patient problems. D. C. General Hospital.

363–64 *Ward Rounds* Nicholson, LoPresti, and Staff

Academic year—as arranged.

Bi-weekly ward rounds, with students and Resident Staff. D. C. General Hospital.

365–66 *Psychiatry* Lourie and Staff

Academic year—as arranged.

Lectures on normal behavior and emotional development. Clinical case analysis.

457–58 *Clinical Clerkship* Anderson and Staff

Six weeks as arranged during academic year.

Full time, including assignment to night and holiday admissions. Case studies on wards under direct Resident supervision. Ward rounds with Staff and Residents. Twelve students. Children's Hospital.

459–60 *Outpatient Clinics* Gutelius and Staff

Academic year—as arranged.

Work in Medical and Specialty clinics including surgery, allergy, X-ray, child welfare, cardiology, dermatology, neurology, and child guidance. Children's Hospital.

461–62 *Clinical Pathological Conferences* The Staff

Academic year—1 hour a week.

Clinical and pathological discussion of recent patient history and laboratory data. Children's Hospital.

463–64 *Section Conferences* The Staff

Academic year—twice a week.

Discussion of clinical problems of diagnosis and treatment of current patients. Children's Hospital.

465–66 *Section Conferences* The Staff

Academic year—1 hour a week.

Surgical diagnosis, pre- and post-operative management. Children's Hospital.

467–68 *Clinical Conferences II* McLendon and Staff

Academic year—1 hour a week.

Required. Case presentation by students. Staff and student discussion of diagnosis and management. Medical School.

469–70 *Child Guidance and Development* Lourie

Academic year—as arranged.

Clerkship in fourth year including Well Baby Clinic. Group and class conferences.

PHARMACOLOGY

Paul Kenneth Smith, Ph.D., *Professor of Pharmacology, Executive Officer*

Harold George Mandel, Ph.D., *Professor of Pharmacology*

Ralph Grafton Smith, M.D., Ph.D., *Clinical Professor of Pharmacology*

Bernard Beryl Brodie, Ph.D., *Professorial Lecturer in Pharmacology*

Clarke Davison, Ph.D., *Associate Professor of Pharmacology*

Moreshwar Vithal Nadkarni, Ph.D., *Assistant Research Professor of Pharmacology*

Eberhard Georg Trams, Ph.D., *Assistant Research Professor of Pharmacology*

Paul Wilhelm Müller, Dr. sc. nat., *Assistant Research Professor of Pharmacology*

Frieda Urey Brown, Ph.D., *Assistant Research Professor of Pharmacology*

Norman Henry Carey, Ph.D., *Assistant Research Professor of Pharmacology*

Claudia Sebeste Prickett, Ph.D., *Assistant Clinical Professor of Pharmacology*

SPECIAL LECTURER IN PHARMACOLOGY

William Vincent Crahan Leahy, Ph.D., *Assistant Chief, Radioisotope Service, Veterans Administration Hospital, Washington, D. C.*

Master of Arts or *Master of Science in the field of Pharmacology (Columbian College).*—Prerequisite: a Bachelor of Arts or Bachelor of Science degree, respectively. The undergraduate program must include the following courses or the equivalent: Biology 1–2 or Zoology 1–2; Physics 6, 7, 8; Chemistry 11–12, 22, 151–52. Biochemistry 221–22 and Physiology 115, 117 are recommended as the undergraduate electives if the candidate wishes to complete the work for the Master's degree in one year.

Required: the general requirements of Columbian College as stated on pages 89–92. The thirty hours of required work must include Biochemistry 221–22; Physiology 115, 117; Pharmacology 261, 263, 267–68, 269–70, 299–300. The remaining courses may be selected from Biochemistry 224, 225–26, 232; Physiology 150; Bacteriology 112, 209, 230; Pharmacology 280.

Master of Arts or *Master of Science in the field of Chemotherapy (Columbian College).*—Prerequisite: a Bachelor of Arts or a Bachelor of Science degree, respectively. The undergraduate program must include the following courses or the equivalent: Biology 1–2 or Zoology 1–2, 41–42; Physics 6, 7; Chemistry 11–12, 22, 151–52. Biochemistry 221–22 is recommended as an undergraduate elective if the candidate wishes to complete the work for the Master's degree in one year.

Required: Bacteriology 112; Biochemistry 221–22; Pharmacology 262, 267–68, 269–70, 299–300. The remaining courses may be selected from Bacteriology 209, 229, 230; Biochemistry 224, 225, 226, 232; Physiology 115, 117; Pharmacology 261, 263.

Doctor of Philosophy (Graduate Council).—See page 98.

261 *Pharmacology* (5) The Staff

Fall—5 hours a week.

Lectures and conferences concerning the interaction of drugs and biological systems as a basis for the rational therapy of disease. Open to qualified nonmedical students.

262 *Chemotherapy* (1) The Staff

Spring—1 hour a week.

Continuation of Pharmacology 261.

263 *Pharmacology Laboratory* (1) The Staff

Fall—3 hours a week.

Laboratory instruction and demonstrations designed to complement Pharmacology 261. Open to qualified nonmedical students.

267–68 *Pharmacological Research* (arr.) The Staff

Academic year—as arranged.

Primarily for those properly qualified graduate and medical students seeking careers in pharmacology.

269–70 *Pharmacology Seminar* (1–1) The Staff

Academic year—2 hours a week.

Recent advances in pharmacology. For those interested in pharmacological research. Open to qualified nonmedical students.

279–80 *Special Methods in Research* (arr.) The Staff

Academic year—as arranged.

A course to familiarize the student with advanced biochemical, microbiological, and physiological methods employed in pharmacological investigations. Open to qualified nonmedical students.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged.

Required of Master of Arts and Master of Science candidates.

339–40 *Therapeutic Conferences I* Staff of Pharmacology and Medicine

Academic year—1 hour a week.

Conferences designed to emphasize the application of pharmacological principles to the problems of clinical medicine.

PHARMACY

Charles Watson Bliven, M.S., *Professor of Pharmacy, Executive Officer*

Robert Meyer Leonard, Ph.D., *Associate Professor of Pharmacology and Pharmacognosy*

Carson Gray Frailey, A.B., LL.B., *Associate Professorial Lecturer on Pharmaceutical Law*

Franklin Dero Cooper, M.S., *Assistant Professor of Hospital Pharmacy*

Charles Joseph Kokoski, Ph.D., *Assistant Professor of Pharmacy*

Samuel Meyer Schwartz, Ph.D., *Assistant Professor of Pharmaceutical Chemistry*

Gust George Koustenis, B.S. in Phar., *Teaching Fellow in Pharmacy Administration*

Special Lecturers

William Paul Briggs, M.S., Sc.D., LL.D., *Executive Director and Secretary, American Foundation for Pharmaceutical Education;* Pharmacy Training

John Christian Krantz, Jr., Ph.D., *Professor of Pharmacology, University of Maryland;* Pharmacological Research

Justin Lawrence Powers, Ph.D., *Chairman, Committee on National Formulary, American Pharmaceutical Association;* Official Drug Standards

Nevis Eugene Cook, B.S., B.S. in Phar., *Assistant to the Director, Bureau of Enforcement, Food and Drug Administration;* Drug Control

Robert Philip Fischelis, B.S., Phar.D., Sc.D., *Secretary and General Manager, American Pharmaceutical Association;* Pharmaceutical Organizations

PGad Bryan Morehouse, LL.M., A.B., *Assistant General Counsel in Charge of Compliance, Federal Trade Commission;* Drug Trade Regulation

Louis Edward Kazin, Phar.G., *Associate Editor, Drug Topics;* Contemporary Pharmacy

Karl Bambach, Ph.D., *Executive Vice-President, American Drug Manufacturers Association;* Pharmaceutical Industry

Bachelor of Science in Pharmacy (School of Pharmacy).—Prerequisite: the Pharmacy curriculum in the Junior College, see pages 69–70. The requirements for the degree are stated on pages 152–55.

Master of Science in Pharmacy (School of Pharmacy).—Prerequisite: the degree of Bachelor of Science from an accredited institution. The requirements for the degree are stated on pages 156 and 157.

First Group

1–2 *History and Literature of Pharmacy* (2–1) Bliven

Academic year—morning.

Orientation in pharmacy; a survey of the development of the profession of pharmacy and the literature of pharmacy.

21–22 *General Pharmacy* (4–4) Kokoski, Cooper, Schwartz

First half: fall—lecture (3 hours), laboratory (3 hours)—afternoon. *Second half:* spring—lecture (2 hours), laboratory (6 hours)—afternoon.

Essential pharmaceutical processes; the theory and manufacture of pharmacopeial and formulary galenical preparations; the pharmaceutical usage of certain classes of substances and preparations. Laboratory fee: Pharmacy 21, $11; Pharmacy 22, $18.

23 *Pharmacognosy* (3) Leonard

Fall: lecture (2 hours)—morning; laboratory (3 hours)—morning and afternoon.

Macroscopic and microscopic. Prerequisite: Botany 1. Laboratory fee, $11.

25 *Pharmaceutical Calculations* (3) Bliven

Fall—morning.

The system of weights and measures and their application in the practice of pharmacy.

Second Group

101 *Inorganic Pharmaceutical Chemistry* (3) Schwartz

Fall: lecture (2 hours)—morning, laboratory (3 hours)—afternoon.

A study of the occurrence, methods of preparation, properties, and uses of the important inorganic chemicals encountered in pharmacy and medicine. Prerequisite or concurrent registration: Chemistry 21. Laboratory fee, $11.

102 *Dispensing Pharmacy* (4) Kokoski, Koustenis

Spring: lecture (2 hours), laboratory (6 hours)—afternoon.

Compounding of typical prescriptions and a study of incompatibilities. Prerequisite: Pharmacy 22; concurrent registration: Pharmacy 110. Laboratory fee, $18.

103 *Dispensing Pharmacy* (4) Kokoski, Koustenis

Fall: lecture (2 hours)—morning, laboratory (6 hours)—afternoon.

Continuation of Pharmacy 102. Laboratory fee, $18.

105–6 *Pharmacology I* (2–2) Leonard

Academic year—afternoon.

The general principles of pharmacology; locally acting drugs; chemotherapeutic agents; antibiotics; antianemia drugs; endocrine drugs; vitamins. Prerequisite or concurrent registration: Physiology 115.

107 *Pharmacy Accounting* (3) Koustenis

Fall—morning.

The financial records required in the operation of a pharmacy.

110 *Chemistry and Pharmacy of Medicinal Products* (3) Schwartz

Spring—morning.

A study of the chemistry, structural relationship to action, and uses of the official and important nonofficial synthetic and natural organic medicinal compounds. Prerequisite or concurrent registration: Chemistry 152.

111 *Chemistry and Pharmacy of Medicinal Products* (3) Schwartz

Fall—morning.

A continuation of Pharmacy 110. Prerequisite: Pharmacy 110.

113 *Chemistry and Pharmacy of Medicinal Products* (1) Schwartz

Laboratory (3 hours). Fall—afternoon; spring—afternoon.

Preparation of selected official organic drugs. Prerequisite: Pharmacy 110. Prerequisite or concurrent registration: Pharamacy 111. Laboratory fee, $11.

165–66 *Pharmacology II* (3–3) Leonard

First half: fall—morning. *Second half:* spring—lecture (2 hours), morning, laboratory (4 hours)—afternoon.

Drugs acting on the central nervous system, the autonomic nervous system, and specific tissues; toxicology; diagnostic drugs; biological assays. Prerequisite: Physiology 115 and 117; Pharmacy 106. Pharmacy 166: laboratory fee, $18.

167–68 *Pharmacology III* (3–3) Leonard

First half: spring—as arranged. *Second half*—not offered 1958–59.

Laboratory work in pharmacological technique. Prerequisite: Pharmacy 106. Prerequisite or concurrent registration: Pharmacy 165. Laboratory fee, $18 a semester.

172 *Advanced Dispensing Pharmacy* (3) Kokoski

Spring—morning.

The study of special problems in dispensing pharmacy. Prerequisite: Pharmacy 103. Laboratory fee, $18.

174 *Quantitative Pharmaceutical Analysis* (3) Bliven, Schwartz

Spring: lecture (1 hour), laboratory (6 hours)—morning.

Drug analysis. Prerequisite: Chemistry 22. Laboratory fee, $18.

176 *Pharmaceutical Law* (2) Frailey

Spring—morning.

178 *Pharmacy Management* (4) Koustenis

Spring—morning.

Policies and operations relating to the management of a pharmacy.

182 *Advanced Pharmacology I* (2)

Not offered 1958–59.

Special problems in the field of pharmacology. Prerequisite or concurrent registration: Pharmacy 166.

184 *Special Problems in Pharmacy* (arr.) Kokoski, Schwartz

Fall—as arranged; spring—as arranged.

Directed laboratory and library research on special problems in pharmacy and pharmaceutical chemistry. For selected undergraduate students. Prerequisite: Pharmacy 102 and 110. Fees to be arranged.

188 *Survey* (1) Bliven and Staff

Spring—morning.

A symposium covering the various phases of pharmacy.

190 *Hospital Pharmacy* (1) Cooper

Spring—afternoon.

Organization and functions of hospitals; organization and operation of a hospital pharmacy; professional and sickroom supplies. Prerequisite: Pharmacy 102.

192 *Hospital Pharmacy: Prescription Practice* (1) Cooper and Staff

Fall—as arranged; spring—as arranged; summer 1958.

Prescription practice in the University Hospital Pharmacy. Prerequisite: Pharmacy 102.

194 *Manufacturing Pharmacy* (3) Cooper and Staff

Lecture (1 hour), laboratory (6 hours). Fall—as arranged; spring—as arranged; summer 1958.

The manufacture of bulk pharmaceuticals in the University Hospital Pharmacy. Elective for seniors.

THIRD GROUP*

201–2 *Survey of Pharmaceutical Literature* (1–1) The Staff

Assigned library research on the development of pharmaceutical literature.

203–4 *Special Problems in General Pharmacy* (2–2) Kokoski

Investigations of problems involved in the manufacture of pharmaceutical preparations on a laboratory scale. Laboratory fee, $18 a semester.

206 *Pharmaceutical Technology* (4) Kokoski, Cooper

Lecture (2 hours); laboratory (6 hours).

A study of advanced manufacturing pharmacy, including formula development for the different types of preparations. Laboratory fee, $18.

215–16 *Advanced Pharmacology II* (3–3) Leonard

Lecture (1 hour); laboratory (6 hours).

Special studies on biological assay methods. Laboratory fee, $18 a semester.

221–22 *Chemistry of Naturally Occurring Organic Medicinal Products* (5–5) Schwartz

Lecture (3 hours); laboratory (6 hours).

A study of the isolation, chemistry, and relationship between the constitution and physiologic action of alkaloids, fats and sterols, terpenes, carbohydrates, glycosides, and the various biological products. Laboratory fee, $18 a semester.

223–24 *Chemistry of Synthetic Organic Medicinal Products* (5–5) Schwartz

Lecture (3 hours); laboratory (6 hours).

A study of the chemistry and relationship between the structure and physiologic action of hydrocarbons and their derivatives, nitrogen compounds, oxygen compounds, sulfur compounds, and organo-metallic compounds. Laboratory fee, $18 a semester.

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* Courses in this group are not offered in 1958–59.

226 *Determination of Physical Constants* (2) Schwartz

Lecture (1 hour); laboratory (3 hours).

A laboratory and lecture study of the determination of physical constants of medicinal products. Laboratory fee, $18.

228 *Food and Drug Analysis* (4) Schwartz, Bliven

Lecture (2 hours); laboratory (6 hours).

A study of the composition of some common foods and food products. Laboratory fee, $18.

231 *Pharmacology of Anesthetic Drugs* (4) Leonard

Theoretical consideration of the principles of anesthesiology and laboratory study of the action of anesthetic drugs. Laboratory fee, $18.

234 *Pharmacology of Autonomic Drugs* (4) Leonard

A study of action and interaction of drugs principally influencing the autonomic nervous system. Laboratory fee, $18.

236 *Experimental Toxicology* (4) Leonard

Pharmacological action of toxic drugs correlated with chemical and pathological studies. Laboratory fee, $18.

251–52 *Graduate Seminar* (1–1) The Staff

Current problems and trends in pharmacy. Required of all students registered for the Master's degree.

295–96 *Research and Thesis* (arr.) The Staff

Investigations of special problems in the major field of interest and thesis preparation. Semester hours (not to exceed 6) and fees to be arranged.

PHILOSOPHY

*Charles Edward Gauss, Mus.B., Ph.D., *Elton Professor of Philosophy, Executive Officer*

Richard Harold Schlagel, Ph.D., *Assistant Professor of Philosophy*

Bachelor of Arts with a major in Philosophy (Columbian College—Field-of-Study).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 68.

Required: in addition to the general requirements of Columbian College stated on pages 82–88, the grade of "pass" for the Philosophy major examination at the end of the senior year. The coordinated knowledge upon which the student will be examined is summarized under the following general headings: (1) history of philosophy, (2) logic and theory of knowledge, (3) social philosophy. The Department of Philosophy provides a proseminar (Philosophy 199–200) intended to assist the student in preparing for the major examination.

Master of Arts in the field of Philosophy (Columbian College).—Prerequisite: an undergraduate major in Philosophy at this University or the equivalent, as attested by the passing of this University's major examination in Philosophy; the following specific courses or the equivalent: Philosophy 111–12, 113, 121–22, and 131.

Required: the general requirements of Columbian College as stated on pages 89–92. As much as possible of the required twenty-four semester hours in course work should be in third-group courses. Students electing second-group courses are expected to do more intensive work than is demanded of undergraduates. A general written examination on the problems of the field of Philosophy and a departmental oral examination are required.

First Group

51–52 *Introduction to Philosophy* (3–3) The Staff

Academic year—morning and evening; summer 1958—Philosophy 51 (3).

A critical introduction to the problems of modern philosophy in relation to scientific and social developments since the Renaissance. This is a unit complete in itself for those interested in the problems of philosophy relevant to modern thought.

Second Group

111–12 *History of Philosophy* (3–3) Gauss

Academic year—morning.

History of western philosophy from Thales to Kant.

113 *History of Nineteenth and Twentieth Century Philosophy* (3) Gauss

Fall—evening.

A history of ideas and influences explaining contemporary thought.

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* On sabbatical leave spring semester 1958–59.

121–22 *Logic and Scientific Method* (3–3) Schlagel

Academic year—morning.

The study of formal logic and the means of investigation and description employed in the sciences; theory of scientific inference and prediction.

131 *Ethics* (3) Schlagel

Fall—evening.

An examination of ethical theories, the relation of ethics to social science and psychology.

142 *Philosophies Men Live by* (3) Schlagel

Spring—evening.

The influence upon contemporary personal and social problems of the great eastern and western philosophies which have served as guides for everyday living and moulded man's cultures and institutions.

152 *Epistemology* (3)

Not offered 1958–59.

Examination of problems related to perception, verification, nature and criteria of truth, difference between *a priori* and *a posteriori* statements, universals, the concept of mind.

162 *Aesthetics* (3) Gauss

Spring—evening.

The problems of appreciation and judgment in the arts, and of theories of the process of artistic creation. Emphasis on contemporary arts and criticism.

171–72 *American Philosophy* (3–3) Schlagel

Summer 1958—Philosophy 172 (3).

A general history of philosophy in the United States, correlated with the development of European thought.

180 *Philosophy of History* (3)

Not offered 1958–59.

Problems of historical knowledge and explanation. Critique of philosophies of history.

193 *Topics in Contemporary Philosophy* (3)

Not offered 1958–59.

199–200 *Proseminar: Readings for the Major* (3–3) The Staff

Academic year—evening.

Conferences and group discussions.

THIRD GROUP

201–2 *Readings and Research* (3–3) The Staff

Academic year—as arranged.

Advanced readings and reports. Investigation of special problems.

211–12 *Seminar in Plato and Aristotle* (3–3) Schlagel

First half: not offered 1958–59. *Second half:* spring—evening.

Topic for spring semester: Aristotle.

213–14 *Seminar in Seventeenth and Eighteenth Century Philosophy* (3–3) Gauss

First half: fall—evening. *Second half*—not offered 1958–59.

Topic for fall semester: Descartes and Locke.

216 *Seminar in Kant* (3)

Not offered 1958–59.

299–300 *Thesis* (3–3) The Staff

PHYSICAL EDUCATION FOR MEN*

William Henry Myers, A.M., *Professor of Physical Education for Men*

Joseph Henry Krupa, M.S., Ed.D., *Professor of Physical Education for Men, Executive Officer*

Jackson Moore Anderson, Ph.D., *Professorial Lecturer in Physical Education*

Raymond George Hanken, B.S. in P.E., A.M., in Ed., *Associate Professor of Physical Education for Men*

Vincent James DeAngelis, B.S. in P.E., A.M. in Ed., *Associate Professor of Physical Education for Men*

Pat Abernethy, A.B., *Lecturer in Physical Education*

William Jennings Reinhart, B.B.A., *Associate in Physical Education for Men*

Eugene Hughey Sherman, Sr., B.S., *Associate in Physical Education for Men*

This department includes all the recognized athletic activities of the men students of the University.

Two years of Physical Education (Physical Education 1–2 and 11–12) are required of all men for graduation, except those students exempt under the regulations stated on pages 51–52.

Upon entering the University, all freshmen or other undergraduate students who have not fulfilled the Physical Education requirements are given a medical examination. Assignments for medical examinations will be given at the time of registration. The students who satisfy the requirements of the medical examination are then given a physical efficiency test in the general bodily skills of agility, endurance, and strength; and in swimming. If the physical efficiency test is passed, the student may elect from the following list of activities:

Setting-up Exercises (stretching exercises)
Body Building Exercises (gymnastic apparatus and weight training skills)
Competitive games and sports
Swimming (beginner, intermediate, advanced, life saving)

If the physical efficiency test is not passed, the student will be assigned to a class for training in the above activities in the order listed.

The Department furnishes gymnasium uniforms and personal equipment upon receipt of a small payment.

Bachelor of Science in Physical Education (School of Education).—Prerequisite: the Physical Education for Men curriculum in the Junior College, see pages 162–63 and 172–73. The requirements for the degree are stated on pages 71.

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* The University is not responsible for injuries received in intercollegiate or intramural games or in any of the activities of the departments of Physical Education, and the student assumes full responsibility therefor.

FIRST GROUP

1–2 *Freshman Physical Education* (1–1) The Staff

Academic year—as arranged.

Two periods of supervised activity a week. Locker and towel fee,* $4.50 a semester.

11–12 *Sophomore Physical Education* (1–1) The Staff

Academic year—as arranged.

Two periods of supervised activity a week. Locker and towel fee,* $4.50 a semester.

43–44 *Techniques of Physical Education Motor Activities* (2–2) DeAngelis, Krupa

Academic year—morning.

Fundamental skills, rules, and organization. Locker and towel fee,* $4.50 a semester.

45–46 *Methods and Materials for Teaching Individual and Dual Sports in Secondary Schools* (2–2) Hanken, Krupa

Academic year—afternoon.

Tennis, golf, swimming, wrestling, badminton, bowling. Locker and towel fee,* $4.50 a semester.

47 *Introduction to Physical Education* (2) Myers

Fall—morning.

An orientation course presenting the problems of physical education, vocational analysis, scientific foundations, and scope of field.

48 *Introduction to Recreation* (2) Hanken

Spring—as arranged.

The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary; types of leadership.

49 *Human Anatomy* (3) Stallings

Fall—morning.

The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1–2 or Zoology 1–2.

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* The locker and towel fee is required for registration in one or more of the activity courses.

Lawrence

50 *Kinesiology* (3)

Spring—morning.

A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy.

DeAngelis, Lawrence

58 *First Aid and Care of Athletic Injuries* (2)

Spring—morning.

Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, and massage. A practical course. Prerequisite: Biology 1–2 or Zoology 1–2.

SECOND GROUP

Atwell, Burtner

101 *Physical Education in the Elementary School* (3)

Fall—afternoon and evening.

Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities.

Atwell, Krupa

103 *History and Principles of Physical Education* (3)

Fall—morning.

Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education.

Lawrence

105–6 *Adapted Physical Education and Physical Examinations* (3–3)

Academic year—morning.

Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50.

Burtner

107 *Techniques for Teaching Recreational Dance* (1 to 2)

Fall—morning.

Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary-school age and adult groups. Square-dance calling is included. Locker and towel fee,* $4.50.

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* The locker and towel fee is required for registration in one or more of the activity courses.

109–10 *Leadership Organization in the Intramural Program* (2–2) DeAngelis

Academic year—afternoon.

Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college.

113–14 *Methods and Practice in Teaching Physical Education Activities* (2 to 4–2 to 4) Hanken and Staff

Academic year—afternoon.

Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Locker and towel fee,* $4.50 a semester.

115–16 *Methods and Materials for Teaching Team Sports in Secondary Schools* (2 to 4–2 to 4) DeAngelis, Hanken

Academic year—morning.

Football, basketball, baseball, track and field. Locker and towel fee,* $4.50 a semester.

117 *Methods of Teaching Modern Dance* (1 to 2) Burtner

1958–59 and alternate years: fall—afternoon.

Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Locker and towel fee,* $4.50.

118 *Dance Production* (1 to 2) Burtner

1958–59 and alternate years: spring—afternoon.

Planning and staging of performances for demonstrations, dance concerts, and folk festivals. Lighting, costuming, sets, and make-up. Choreography for concerts, musicals, and plays for students taking course for two credits. Locker and towel fee,* $4.50.

121 *School and Community Health Programs* (3) Krupa and Staff

Fall—afternoon.

Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1–2 or Zoology 1–2.

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* The locker and towel fee is required for registration in one or more of the activity courses.

122 *Methods and Materials for Health Education* (3) Atwell

Spring—evening.

Methods and materials for teaching health at each age level. Prerequisite: Biology 1–2 or Zoology 1–2.

131 *Tests and Measurements in Physical Education* (3) Krupa

Fall—morning.

Critical survey of tests in physical activities, methods of test construction, elementary statistics.

132 *Camp Leadership* (1 to 2) Atwell, Stallings

Spring—afternoon.

Survey of outdoor education programs with special emphasis on leadership techniques for counselors.

133–34 *Observation and Student Teaching* (3–3 to 6) Atwell, Myers

First half: fall and spring—as arranged. *Second half:* fall and spring—as arranged.

Assignments are made to schools in Washington and the vicinity. Physical Education 134, student teaching fee, $50.

136 *Survey of Dance History and Dance Forms* (3) Burtner

Spring—evening.

The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance, practice and discussion of fundamental movement techniques, and composition.

138 *Organization and Administration of Physical Education* (3) Atwell, Myers

Spring—morning and evening.

Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs.

151–52 *Recreational Leadership Activities* (1 to 3–1 to 3) Abernethy

1959–60 and alternate years.

Fall semester: basic skills for the preschool and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities.

161 *Community Organization for Recreation* (3) Anderson

1958–59 and alternate years: fall—evening.

Resources, principles, and methods in organizing community recreation services.

162 *Administration of Community Recreation Programs* (3) Anderson

1958–59 and alternate years: spring—evening.

Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations.

PHYSICAL EDUCATION FOR WOMEN*

Ruth Harriet Atwell, A.M., *Professor of Physical Education for Women, Executive Officer*

Helen Bennett Lawrence, A.M., *Professor of Physical Education for Women*

Elizabeth Burtner, A.M., *Professor of Physical Education for Women*

Jackson Moore Anderson, Ph.D., *Professorial Lecturer in Physical Education*

Loretta May Stallings, A.M., *Assistant Professor of Physical Education for Women*

Camille Jacob Craig, B.S. in P.E., A.M. in Ed., *Assistant Professor of Physical Education for Women*

Pat Abernethy, A.B., *Lecturer in Physical Education*

Gay Ellen Cheney, B.S. in Ed., *Instructor in Physical Education for Women*

Mabel McEwan, A.B., *Associate in Physical Education for Women*

Two years of Physical Education (Physical Education 1–2 and 11–12) are required of all women for graduation, except students exempt under regulations stated on pages 51–52. In the fall a complete medical and physical examination is given each student for the purpose of discovering individual needs. Those students whose examinations indicate the desirability of remedial or restricted activity are assigned to a program especially adapted to their needs. This limited program includes moderate sports and individual exercises in small groups under careful supervision.

The required costume for Physical Education classes may be purchased at the University Book Store.

Bachelor of Science in Physical Education (School of Education).—Prerequisite: the Physical Education for Women curriculum in the Junior College, see page 71. The requirements for the degree are stated on pages 162–63 and 173–74.

Within the curriculum leading to the degree of Bachelor of Science in Physical Education there is opportunity for specializing in dance, correctives, or recreation.

First Group

The Staff

1–2 *Freshman Physical Education* (1–1)

Academic year: fundamentals of health and physical education—morning and afternoon; activity—morning and afternoon.

One period of fundamentals of health and physical education and two periods a week chosen from the activities offered each season.

Fundamentals of health and physical education: one semester on study of the factors involved in the general maintenance of health, efficient use of the body, and fundamentals of movement; one semester on fundamentals of dance.

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* The University is not responsible for injuries received in intercollegiate or intramural games or in any of the activities of the departments of Physical Education, and the student assum full responsibility therefor.

Activities: badminton, basketball, body mechanics, canoeing, field hockey, recreational dance, golf, modern dance, riding, skating, swimming, synchronized swimming, tennis, bowling, volleyball, softball, lifesaving. Locker and towel fee,* $4.50 a semester.

11–12 *Sophomore Physical Education* (1–1) The Staff

Academic year: two periods a week—morning and afternoon.

Two periods a week chosen from the activities offered each season as listed under Physical Education 1–2. Locker and towel fee,* $4.50 a semester.

43–44 *Techniques of Physical Education Motor Activities* (2–2) The Staff

Academic year—as arranged.

Fundamental skills, rules, and organization. Locker and towel fee,* $4.50 a semester.

47 *Introduction to Physical Education* (2) Myers

Fall—morning.

An orientation course presenting the problems of physical education, vocational analysis, scientific foundations, and scope of field.

48 *Introduction to Recreation* (2) Hanken

Spring—as arranged.

The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary; types of leadership.

49 *Human Anatomy* (3) Stallings

Fall—morning.

The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1–2 or Zoology 1–2.

50 *Kinesiology* (3) Lawrence

Spring—morning.

A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy.

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* The locker and towel fee is required for registration in one or more of the activity courses.

51–52 *Methods and Materials for Teaching Physical Education Activities in Secondary Schools and Colleges* (2–2)

The Staff

Academic year—as arranged.

Team sports: basketball, hockey, softball, soccer, speedball, volleyball. Individual and dual sports: badminton, tennis, golf, archery, swimming and diving, lifesaving and water safety. Group gymnastics. Tumbling. Locker and towel fee,* $4.50 a semester.

58 *First Aid and Care of Athletic Injuries* (2)

DeAngelis, Lawrence

Spring—morning.

Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, and massage. A practical course. Prerequisite: Biology 1–2 or Zoology 1–2.

SECOND GROUP

101 *Physical Education in the Elementary School* (3)

Atwell, Burtner

Fall—afternoon and evening.

Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities.

103 *History and Principles of Physical Education* (3)

Atwell, Krupa

Fall—morning.

Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education.

105–6 *Adapted Physical Education and Physical Examinations* (3–3)

Lawrence

Academic year—morning.

Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50.

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* The locker and towel fee is required for registration in one or more of the activity course

107 *Techniques for Teaching Recreational Dance* (1 to 2) Burtner

Fall—morning.

Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary school age and adult groups. Square-dance calling is included. Locker and towel feee,* $4.50.

109–10 *Leadership Organization in the Intramural Program* (2–2) DeAngelis

Academic year—afternoon.

Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college.

111–12 *Methods and Materials for Teaching Physical Education Activities in Secondary Schools and Colleges* (1 to 2–1 to 2) The Staff

Academic year—morning.

Continuation of methods and materials in activities listed under Physical Education 51–52. Locker and towel fee,* $4.50 a semester.

113–14 *Methods and Practice in Teaching Physical Education Activities* (2 to 4–2 to 4) The Staff

Academic year—as arranged.

Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Locker and towel fee,* $4.50 a semester.

117 *Methods of Teaching Modern Dance* (1 to 2) Burtner

1958–59 and alternate years: fall—afternoon.

Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Locker and towel fee,* $4.50.

118 *Dance Production* (1 to 2) Burtner

1958–59 and alternate years: spring—afternoon.

Planning and staging of performances for demonstrations, dance concerts, and folk festivals. Lighting, costuming, sets, and make-up. Choreography for concerts, musicals, and plays for students taking course for two credits. Locker and towel fee,* $4.50.

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* The locker and towel fee is required for registration in one or more of the activity courses.

121 *School and Community Health Programs* (3) Krupa and Staff

Fall—afternoon.

Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1–2 or Zoology 1–2.

122 *Methods and Materials for Health Education* (3) Atwell

Spring—evening.

Methods and materials for teaching health at each age level. Prerequisite: Biology 1–2 or Zoology 1–2.

131 *Tests and Measurements in Physical Education* (3) Krupa

Fall—morning.

Critical survey of tests in physical activities, methods of test construction, elementary statistics.

132 *Camp Leadership* (1 to 2) Atwell, Stallings

Spring—afternoon.

Survey of outdoor education programs with special emphasis on leadership techniques for counselors.

133–34 *Observation and Student Teaching* (3–3 to 6) Atwell, Myers

Academic year—as arranged.

Assignments are made to schools in Washington and the vicinity. Physical Education 134, student-teaching fee, $50.

136 *Survey of Dance History and Dance Forms* (3) Burtner

Spring—evening.

The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance, practice and discussion of fundamental movement techniques, and composition.

138 *Organization and Administration of Physical Education* (3) Atwell, Myers

Spring—morning and evening.

Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs.

151–52 *Recreational Leadership Activities* (3–3) Abernethy

1959–60 and alternate years.

Fall semester: basic skills for the preschool and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities.

161 *Community Organization for Recreation* (3) Anderson

1958–59 and alternate years: fall—evening.

Resources, principles, and methods in organizing community recreation services.

162 *Administration of Community Recreation Programs* (3) Anderson

1958–59 and alternate years: spring—evening.

Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations.

PHYSICAL MEDICINE AND REHABILITATION

Charles Samuel Wise, B.S., M.D., *Professor of Physical Medicine and Rehabilitation, Executive Officer*

John Watt, Jr., M.D., *Assistant Clinical Professor of Physical Medicine and Rehabilitation*

Alvin Knudson, B.S., M.D., *Associate in Physical Medicine and Rehabilitation*

Charles Jerome Everding, B.S., M.D., *Clinical Instructor in Physical Medicine and Rehabilitation*

150 *Elements of Physical Medicine* — The Staff

Spring—as arranged.

In arrangement with the Anatomy Department, lectures and demonstrations of the various tests and measurements are employed in the evaluation of physical disability.

352 *Advanced Physical Medicine* — The Staff

Spring—1 hour a week.

Lectures and demonstrations concerning the various techniques, clinical applications of physical medicine and rehabilitation to be integrated with the teaching of the associated medical and surgical specialties.

467–68 *Clinical Studies* — The Staff

Academic year—as arranged.

Clinical teaching and demonstration at the University Hospital.

485 *Research* (arr.) — The Staff

Fall—as arranged.

Open to medical students and qualified nonmedical students.

PHYSICS

George Martin Koehl, A.M., *Professor of Physics*
Lewis Slack, Ph.D., *Professor of Physics, Acting Executive Officer*
Clyde Lorrain Cowan, Jr., Ph.D., *Professor of Physics*
Ugo Fano, Sc.D., *Professorial Lecturer in Physics*
John Lyle Prather, A.B., *Assistant Professor of Physics*
Albert Prentice Kenyon, A.M., *Lecturer in Physics*
John Newell Tevis, A.M., *Lecturer in Physics*
DeWitt Fisher, A.M., *Lecturer in Physics*
John May Harrison, M.S., *Lecturer in Physics*
Serge Golian, M.S., *Lecturer in Physics*
Herbert Rabin, M.S., *Lecturer in Physics*
Merwin Bishop Forbes, A.M., *Associate in Physics*
John Ettinger Tompkins, A.M., *Associate in Physics*
William John Condell, Jr., M.S., *Associate in Physics*

Bachelor of Arts or *Bachelor of Science with a major in Physics (Columbian College—Departmental).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 68–69. The following courses must be included: Physics 5, 6, 7, 8, and 55; Chemistry 21; Mathematics 19 and 20.

Required, for both the Bachelor of Arts degree and the Bachelor of Science degree: the general requirements of Columbian College as stated on pages 82–88, including Mathematics 132 and Physics 101, 105, 106, 113, 132, 153, and 155 or 156, plus *one* of the following: Physics 102, 114, 118, 123, and 128.

Master or Arts or *Master of Science in the field of Physics (Columbian College).*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Physics at this University, or the equivalent. Required: the general requirements as stated on pages 89–92. The thirty hours of required work must include Mathematics 171 (if not taken earlier) and Physics 211–12, 255 or 256, and 291–92.

Doctor of Philosophy (Graduate Council).—See page 98.

Bachelor of Science in Engineering with an option in Physics (School of Engineering).—For requirements, see pages 138–41 and 143–44.

Bachelor of Arts in Education with a teaching field in Physics (School of Education).—Prerequisite: the Education curriculum, page 70.

Required: the Physics option, page 169; and the professional courses listed on page 171.

FIRST GROUP

5 *General Physics* (3) Koehl, Prather, and Staff

Lecture (1 hour), recitation (1 hour), laboratory (2½ hours). Fall—morning, afternoon, and evening. Spring: lecture—morning and evening; recitation—morning, afternoon, and evening; laboratory—morning, afternoon, and evening. Summer 1958.

An introduction to the phenomena of light, heat, force, energy, and the properties of matter. This course may be taken as a terminal course by nonscience students who wish an introduction to the physical sciences. Prerequisite: high school algebra and plane geometry. Material fee, $11.

The Staff

6 *General Physics* (3)

Spring: lecture (1 hour), recitation (1 hour), laboratory (2½ hours) —morning, afternoon, and evening.

Mechanics, wave-motion, and sound. Prerequisite: Physics 5; high school algebra and plane geometry. Material fee, $11.

The Staff

7 *General Physics* (3)

Fall: lecture (1 hour), recitation (1 hour), laboratory (2½ hours)—morning, afternoon, and evening; summer 1958.

Elementary electricity and magnetism. Prerequisite: Physics 5; high school algebra and plane geometry. Material fee, $11.

Prather and Staff

8 *General Physics* (3)

Spring—morning and evening; summer 1958.

This course is the fourth in the sequence of courses 5, 6, 7, and 8, and emphasizes the connection between the fundamental principles studied in courses 5, 6, and 7, and the phenomena and theories of modern physics. Topics considered include electromagnetic waves (light, radio, and X-rays); atomic and molecular structure; radioactivity; nuclear physics; the quantum theory of matter and radiation; and the elementary particles such as electrons, protons, neutrons, and mesons. Prerequisite: Physics 6 and 7.

Slack and Staff

55 *Physical Measurements* (3)

Fall: lecture (2 hours), laboratory (3 hours)—afternoon and evening.

Theory and methods of precise measurements in the several fields of physics. Prerequisite: Physics 6 and 7; Mathematics 19. Material fee, $11.

SECOND GROUP

Koehl

101 *Mechanics* (3)

1958–59 and alternate years: fall—evening; 1959–60 and alternate years: fall—morning.

Statics, elasticity, dynamics of solids and fluids, and gravitation. Prerequisite: Physics 6; Mathematics 20.

Prather

102 *Heat and Thermodynamics* (3)

1959–60 and alternate years.

Fundamental concepts, heat transfer, the laws of thermodynamics with applications to physical systems. Prerequisites: Physics 8; Mathematics 20.

105 *Principles of Electricity* (3) Slack

1958–59 and alternate years: fall—morning; 1959–60 and alternate years: fall—evening.

Elementary d-c and a-c circuit theory, electric and magnetic fields, dielectric and magnetic materials, motion of charged particles in electric and magnetic fields. Prerequisite: Physics 8; Mathematics 20.

106 *Optics* (3) Koehl

1958–59 and alternate years: spring—morning; 1959–60 and alternate years: spring—evening.

Geometrical optics; elementary theory of wave motions; interference, diffraction, polarization, and dispersion of light; laws of black-body radiation. Prerequisite: Physics 8; Mathematics 20.

113 *Atomic Physics* (3) ————

1958–59 and alternate years: fall—morning; 1959–60 and alternate years: fall—evening.

Properties of elementary particles, interactions with radiation, atomic structure, optical and X-ray spectra, introduction to wave mechanics. Prerequisite: Physics 8; Mathematics 20.

114 *Statistical Physics* (3) Prather

1959–60 and alternate years.

Classical and quantum statistics with emphasis on Maxwell-Boltzmann statistics; applications to kinetic theory of gases, gaseous diffusion, specific heats of gases and solids. Prerequisite: Physics 8; Mathematics 20; permission of the instructor.

118 *Introduction to Solid State Physics* (3) ————

Spring—evening; summer 1958.

Dielectric and magnetic properties of solids, electron theory of metals, semiconductors, dislocations, and plastic flow. Prerequisite: Physics 113; Mathematics 20.

123 *Nuclear Physics* (3) Cowan

1958–59 and alternate years: spring—morning; 1959–60 and alternate years: spring—evening.

Structure and stability of atomic nuclei, nuclear transformations and reactions, radiations of nuclei, fission. Prerequisite: Physics 113.

128 *Sound* (3) Slack

1958–59 and alternate years: spring—evening.

Production, propagation, and detection of sound waves; vibrations of sounding bodies; acoustic instruments and acoustic measurements Prerequisite: Physics 8; Mathematics 20.

Cowan and Staff

132 *Electronics* (3)

Spring: lecture (2 hours), laboratory (3 hours)—morning and evening.

The phenomena of electron emission from solids, the physical properties of electron tubes, and the principles underlying their basic applications. Prerequisites: Physics 8 and 55, and a course in d-c and a-c circuits in Physics or Engineering. Material fee, $11.

138 *Transistor Principles and Circuits* (3)

Not offered 1958–59.

Qualitative description of transistor action, introduction to transistor circuit analysis, low frequency circuits, power amplifiers, high frequency equivalent circuits, video and intermediate frequency amplified design, linear and nonlinear oscillators. Prerequisite: Physics 132 or the equivalent.

Slack

153 *Laboratory in Atomic Physics* (3)

Spring: Saturday—as arranged.

Prerequisite: Physics 8, 55. Material fee, $11.

155 *Advanced Laboratory in Electricity and Magnetism* (3)

Spring: Saturday—as arranged.

Prerequisite: Physics 55, 105. Material fee, $11.

Koehl

156 *Advanced Laboratory in Optics* (3)

Spring: Saturday—as arranged.

Prerequisite: Physics 55, 106. Material fee, $11.

Golian

191 *Nuclear Reactors* (3)

Fall—evening.

Neutron physics: sources of neutrons, neutron reactions, slowing down and diffusion; introduction to transport theory; fission process; reactor types; basic theory of homogeneous and heterogeneous reactors, including specific numerical studies from recent publications. Prerequisite: Physics 8; Mathematics 20.

THIRD GROUP

211 *Classical Physical Theory* (3)

Fall—evening.

Dynamics of systems of particles and of rigid bodies, generalized coordinates. Prerequisite: Physics 101; Mathematics 132, 171. (Mathematics 171 may be taken concurrently.)

212 *Classical Physical Theory* (3) ————

Spring—evening.

Classical nonrelativistic field theory with applications to electromagnetic and hydrodynamic fields. Prerequisite: Physics 101 and 105; Mathematics 132, 171.

219–20 *Wave Mechanics* (3–3) Fano

Academic year—evening.

Criticism of classical ideas of mechanics and a formulation of wave-mechanical equations; matrix mechanics and its relation to wave mechanics; application to various problems of atomic, molecular, and nuclear physics. Prerequisite: Physics 113, 211, 212.

222 *Quantum Electrodynamics and Field Theories* (3)

Not offered 1958–1959.

Relativistic wave equations, quantization of electromagnetic fields, interaction between matter and radiation, elementary particles and their transformations. Prerequisite: Physics 219–20.

227 *Statistical Thermodynamics* (3) Prather

Spring—evening.

Axiomatic formulation of thermodynamics. Thermodynamics potentials and equilibria. The method of Gibbs. Statistical theory based on indistinguishability of particles. Bose-Einstein and Fermi-Dirac statistics. Applications to radiation, electron, gases, etc. Prerequisite: Physics 102, 114; Mathematics 132.

255–56 *Graduate Laboratory* (4–4) The Staff

Academic year: Saturday—as arranged.

Individual work on special topics. One semester of this course is required of all Master's candidates in physics. Students electing this course may begin with Physics 255 or 256. Not open to undergraduates. Material fee, $11 a semester.

291–92 *Seminar: Recent Developments in Physics* (1–1) The Staff

Academic year: alternate weeks—Monday evening.

Individual investigations of special problems. All students registered for a Master's degree in physics are expected to attend this seminar during residence for the degree, and to take part in its programs. Credit for participation in the seminar work is obtained by registering for this course during the last two semesters of residence; this credit, however, is based upon the seminar work during the entire period of residence.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged.

Fees to be arranged.

PHYSIOLOGY

Chester Elwood Leese, Ph.D., *Fry Professor of Physiology*

Charles Adrian Michael Hogben, M.D., Ph.D., *Professor of Physiology, Executive Officer*

William Rankin Duryee, Ph.D., *Research Professor of Physiology*

Eugene Marshall Renkin, Ph.D., *Assistant Professor of Physiology*

Habeeb Bacchus, Ph.D., M.D., *Assistant Clinical Professor of Physiology*

Charles Arthur Toompas, Ph.D., *Instructor in Physiology*

Francis DeSales Woidich, B.S., M.D., *Associate in Physiology*

Master of Arts or *Master of Science in the field of Physiology (Columbian College).*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Biology, Chemistry, Physics, or Zoology from this University, or the equivalent. The undergraduate work should include introductory zoology, chemistry, and physics. It should be supplemented by further courses in mathematics and science such as calculus, physical and organic chemistry.

Required: the general requirements of Columbian College as stated on pages 89–92. In addition to the thesis, the thirty hours of required work should include Physiology 221 or 222, 231, and at least three credit hours of research (Physiology 295 or 296). Biochemistry 221–22 is required unless it was included in the undergraduate program.

Doctor of Philosophy (Graduate Council).—See page 98.

Leese, Toompas

115 *Physiology* (3)

Fall: section A—Tues. and Thurs., 8:45 to 10:00 A.M.; section B—Tues. and Thurs., 5:10 to 6:25 P.M.

Lectures for nonmedical students covering the fundamentals of physiology in its various subdivisions. Prerequisite: one year of general science or one semester of a biological science.

Toompas

117 *Experimental Physiology* (1)

Fall—Sat., 9:10 to 12:00 A.M.

Laboratory exercises in the fundamentals of physiology for nonmedical students. Prerequisite or concurrent registration: Physiology 11; or the equivalent. Material fee, $18.

The Staff

120 *Physiology of Endocrine Activity* (2)

Spring—Tues. and Thurs., 6:10 P.M.

For nonmedical students. The circulatory, metabolic, reproductive, growth, and other adaptations, immediate and long term, accompanying and affecting endocrine activity. Prerequisite: Physiology 115 or the equivalent.

130 *The Psycho-physiology of Personality* (2) Leese

Spring—Tues. and Thurs., 5:10 P.M.

For nonmedical students. Lectures on the genesis and expression of personality, with emphasis on the physiological approach. Prerequisite: Physiology 115 or the equivalent and general psychology.

149–50 *Medical Physiology* Hogben and Staff

Fall—4 hours a week; spring—14 hours a week.

Lectures and laboratory work in all divisions of Physiology. This course is designed for medical students.

211–12 *Problems in Physiology* (arr.) Leese

Academic year—as arranged.

For nonmedical graduate students. Open to undergraduate students with the approval of the Department. Prerequisite: Physiology 115 and 117, or the equivalent.

221–22 *Physiology Seminar* (1–1) Renkin

Academic year—1 hour a week, as arranged.

For nonmedical students undertaking graduate work in physiology. Prerequisite: Physiology 115 and 117, or the equivalent.

231–32 *Advanced Physiology* (6–6) Renkin and Staff

Fall—4 hours a week; spring 14 hours a week, as arranged.

For nonmedical graduate students. Lectures and laboratory work in all major areas of physiology. In exceptional cases, study of a restricted area, such as neurophysiology, will be sanctioned for partial credit. Physiology 132: material fee, $42.

241 *Advanced Physiology of the Cell* (1) Duryee

Fall—1 hour a week, as arranged.

For nonmedical graduate students. Special emphasis on biophysics and the biochemistry of the cell in relation to organ function.

295–96 *Research* (arr.) The Staff

Academic year—as arranged.

299–300 *Thesis* (3–3) The Staff

POLITICAL SCIENCE

Warren Reed West, Ph.D., *Professor of Political Science*
John Withrow Brewer, Ph.D., *Professor of International Law, Executive Officer*
*Wolfgang Herbert Kraus, Dr. Jur., S.J.D., *Professor of Political Scienc*
Floyd Millard Riddick, Ph.D., *Professorial Lecturer in Political Science*
Robert Amendt Kinney, A.B., *Associate Professorial Lecturer in Political Science*
Howard Rowland Ludden, A.M., *Assistant Professor of Political Scienc*
Hugh Linus LeBlanc, A.M., *Assistant Professor of Political Scienc*
William Spencer, A.M., *Lecturer in Political Science*

Bachelor of Arts with a major in Political Science (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College stated on page 68, including Political Science 9–10.

Required: in addition to the general requirements of Columbian College stated on pages 82–88, thirty semester hours from the following groups distributed as follows: twelve hours from Group A; six hours from Group B; 12 hours from Groups A, B, or C.

Group A: Political Science 111, 112, 117–18, 121–22. Group B: Political Science 171, 172, 181–82. Group C: Political Science 104, 105, 107, 113, 120, 125, 141, 145, 146, 151–52, 157–58, 162, 177, 178, 187–88, 191, 194.

Undergraduate students interested in preparing for graduate work in Public Administration will consult the Executive Officer of the Department of Political Science for modifications of the above requirements.

Bachelor of Arts with a major in Latin American Civilization (Columbian College—Field-of-Study).—See the Department of History, page 326.

Master of Arts in the field of Political Science (Columbian College).—Prerequisite: a Bachelor of Arts degree with a major in Political Science at this University, or the equivalent, with a *B* average in the major.

Required: the general requirements of Columbian College as stated on pages 89–92. The thirty hours of required work must be approved in advance by the Adviser.

Master of Arts in the field of Latin American Civilization (Columbian College).—See the Department of History, page 327.

Doctor of Philosophy (Graduate Council).—See page 98.

Bachelor of Arts and *Master of Arts in Government in the fields of Foreign Affairs* and *Public Affairs (School of Government)*.—See pages 186–89, 193–95.

First Group

1 *Introduction to Government*† (3)

LeBlanc

Fall—morning; spring—morning.

Basic principles and problems of political life: theories, forms, and processes of government in the United States and foreign countries. Attention is also given to international relations.

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* On sabbatical leave 1958–59.

† Six hours of first-group Political Science courses are prerequisite to all second-group courses.

9–10 *Government of the United States* * (3–3) The Staff

First half: fall—morning and evening; spring—morning; summer 1958. *Second half:* fall—morning; spring—morning and evening; summer 1958.

First half: structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court; elections, political parties, and pressure groups. *Second half:* state and local governments; civil rights; major functions of government at federal, state, and local levels.

SECOND GROUP*

104 *State and Local Governments* (3) LeBlanc

1959–60 and alternate years.

State, municipal, and other local governmental forms, operations, and problems, with attention to policy formulation and administration, and to the forces of practical politics. Not open to students who have credit for former Political Science 115.

105 *The Governmental Process of the District of Columbia* (3) LeBlanc

Summer 1958.

Legal structure and political problems of the District of Columbia including restrictions on home rule, Congressional relations, and group politics.

107 *Problems in Modern Political Thought* (3) Kraus

Summer 1958.

Development of democratic political institutions and analysis of the main challenges to constitutional democracy in the 19th and 20th centuries

111 *Introduction to Comparative Government* (3) Kraus

Fall—morning; summer 1958.

Government and politics of the principal constitutional democracies of Western Europe, with special attention to Great Britain and France.

112 *Introduction to Comparative Government* (3) Kraus

Spring—morning.

Government and politics of the principal political systems of Central and Eastern Europe: Germany and the Soviet Union.

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* Six hours of first-group Political Science courses are prerequisite to all second-group courses.

113 *Political Problems of the British Commonwealth of Nations* (3)

Not offered 1958–59.

Transformation of the Colonial Empire into the modern Commonwealth: questions of equal partnership, and governments and policies in the principal dominions.

Kraus

117–18 *Political Theory: the Growth of Political Thought in the West* (3–3)

Academic year—evening.

First half: from Classical Antiquity to the Middle Ages. *Second half:* from the Renaissance and Reformation to recent times.

Brewer

120 *Foundations of American Democracy* (3)

1958–59 and alternate years: spring—morning.

Introduction to political thought in the United States, from colonial times to the end of the Civil War period.

West

121–22 *The Constitution of the United States* (3–3)

Academic year—evening; summer 1958—Political Science 121 (3).

Judicial power of federal courts in constitutional interpretation. *First half:* emphasis on separation of powers, federal-state relationships, and taxation. *Second half:* emphasis on constitutional protection of civil rights.

Riddick

125 *Legislative Organization* (3)

1959–60 and alternate years.

A study of Congress: constitutional aspects, legal analysis of make-up, and political organization. Political and parliamentary procedures used in the preparation and enactment of legislation. Not open to students who have credit for former Political Science 124.

Brewer

141 *The Development of Legal Institutions* (3)

1959–60 and alternate years.

Introduction to historical jurisprudence: primary attention to the origins of the Roman Law of Continental Europe and of the Anglo-Saxon Common Law.

LeBlanc

145 *Political Parties and Politics* (3)

Fall—evening; summer 1958.

Organization and operations of political parties in the United States: major and minor parties, bosses and corruption, nominations and elections, influence on President and Congress. Not open to students who have credit for former Political Science 116.

146 *Political Pressures and Public Reactions* (3) Ludden

Spring—morning.

Public opinion, special interest lobbies, and pressure groups as they operate on government to influence public policy.

151–52 *Public Administration* (3–3) LeBlanc

Academic year—morning.

Introductory survey of the theory and practice of governmental administration and its relation to politics, legislation, the courts, and nongovernmental organizations and interests.

157–58 *Current Problems in Domestic Politics* (1–1) ________

Academic year—evening.

Analysis of outstanding contemporary issues in internal American politics with discussion of problems and policies.

162 *Administrative Law* (3) LeBlanc

1958–59 and alternate years: spring—evening.

Survey of relationships between administrative and judicial power, with consideration of problems of separation of powers, delegation of power, and administrative power over private rights.

166 *Field Work in Government* (3) ________

Spring—as arranged.

Practical training in the operation of the Federal Government, based on experience through assignment to selected government offices. Students will have an opportunity to observe and participate in government in the Washington area.

171 *International Politics* (3) Ludden, ________

Fall—evening; spring—morning; summer 1958.

Basic forces underlying the conduct of international relations and the formation of foreign policy: power politics, imperialism, collective security, and international cooperation.

172 *International Organization: the United Nations* (3) Ludden

Fall—morning; spring—evening; summer 1958.

Development and current operation of international organization within the system of sovereign states with emphasis on the United Nations.

Davis

177 *Recent Trends in Latin American Politics and Government* (3)

Fall—morning.

Types of government, recent developments, and current political conditions in each of the twenty Latin American republics. May not be taken by students who have had Political Science 176 for credit.

Davis

178 *International Politics in the Western Hemisphere* (3)

Spring—morning.

Political relations of the American Republics in the 19th and 20th centuries, the development of Pan Americanism and the Organization of American States. May not be taken by students who have had Political Science 175 for credit.

Brewer

181–82 *International Law* (3–3)

Academic year—morning and evening; summer 1958—Political Science 181 (3).

Survey of the public law of nations with emphasis on the law of peace. Neutrality and the so-called law of war receive attention in the second semester.

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187–88 *Current Problems in International Politics* (1–1)

Academic year—evening.

Analysis of outstanding contemporary international issues with discussion of problems and policies.

Spencer

191 *Government and Politics in the Middle East* (3)

Fall—as arranged.

International relations and governmental problems of the Arab world and adjacent areas.

Kinney

194 *Far Eastern Politics: Contemporary International Relations in the Pacific Area* (3)

Spring—evening.

Background and development of the major states of East Asia with attention to the constitutional systems and the foreign politics of the region.

———, Ludden

197 *Proseminar in Foreign Affairs* (3)

Fall—evening; spring—morning.

Reading and discussion course for coordination and review. Primarily for seniors in the Foreign Affairs major.

THIRD GROUP

205–6 *The Federal Executive* (3–3) ————

Academic year—evening.

First half: nomination and election of the U. S. President, his constitutional and political powers; the cabinet and the Executive Office of the President; the relation of the President to the executive and legislative branches of the government. *Second half:* the practical politics of the presidency, presidential policy leadership and control, the President as party head and as moulder of public opinion.

209–10 *Seminar: the Federal Government of the United States* (3–3) West

1959–60 and alternate years.

Advanced research emphasizing legislative problems of Congress and relations of Congress with the Administration.

212 *Seminar: Comparative Government* (3) Kraus

1958–59 and alternate years: spring—evening.

Selected topics and problems on comparative political and administrative institutions and the politics of modern constitutional governments and dictatorships.

213 *Readings in Comparative Government* (3) Kraus

1959–60 and alternate years. Summer 1958.

Readings and group discussions on comparative political and administrative institutions with attention to legislatures, executive departments, political parties, etc.

217 *Seminar: Topics in Political Theory* (3) Kraus

1959–60 and alternate years.

Research and discussion on problems of modern political and constitutional theory, theoretical aspects of representative government, democracy, socialism, and totalitarianism.

220 *Reading Course in Political Theory* (3) Kraus

1958–59 and alternate years: fall—evening.

Readings and group discussions, principally on modern political and constitutional theory since the 17th century.

271–72 *Problems in International Politics and Organization* (3–3) ————

Academic year—evening.

A seminar to develop techniques of research in recent international affairs and to examine developments in international politics and organizations.

273 *Public Opinion and Foreign Policy* (3) Ludden

Fall—evening.

Development, organization, and operation of international information programs by major world powers. Public opinion in the United States influencing the formation and conduct of foreign policy.

274 *Methods and Objectives of Foreign Policy* (3)

Spring—evening.

Examination of the objectives of foreign policies of the major powers, with attention to political, economic, and military methods used to pursue these objectives.

277 *Seminar: Latin American Government* (3) Davis

Fall—evening; summer 1958.

Analysis of the political structures of selected Latin American republics. Two comparable governments studied each year.

278 *Seminar: Latin American Political Philosophy* (3) Davis

Spring—evening.

Research in political personalities and philosophies of 19th and 20th century Latin America.

279 *Reading Course in International Affairs* (3)

1958–59 and alternate years: fall—evening; summer 1958.

Reading and discussion of basic materials designed to stimulate investigation of problems in the nature and development of international law, politics, and organization.

281–82 *Seminar: International Law and Relations* (3–3) Brewer

First half:—summer 1958. *Second half:* fall—evening.

Research topics in the public law of nations, with special attention to problems of pacific settlement, sanctions, war, neutrality, and state jurisdiction, and to their political implications.

292 *International Politics and Government in the Middle East* (3)

Spring—evening.

Research and analysis of the international relations and major political problems of the Arab world and adjacent areas.

293–94 *Seminar: International Politics and Government in the Pacific Area* (3–3) Kinney

Academic year—evening.

Research and analysis of the major patterns of development in internal and international politics of the area, with advanced study of the governmental institutions of the Far East.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1958.

PSYCHIATRY

Winfred Overholser, A.B., M.D., Sc.D., L.H.D., *Professor of Psychiatry, Executive Officer*
Addison McGuire Duval, M.D., *Clinical Professor of Psychiatry*
Leon Yochelson, A.B., M.D., *Clinical Professor of Psychiatry*
Joel Elks, M.B., Ch.B., M.D., *Clinical Professor of Psychiatry*
Henry Prather Laughlin, B.S., M.D;, *Associate Clinical Professor of Psychiatry*
Marshall deGraffenried Ruffin, B.S., M.D., *Associate Clinical Professor of Psychiatry*
Joseph Eugene Rankin, B.S., M.D., *Assistant Professor of Psychiatry*
Sidney Berman, B.S., M.D., *Assistant Clinical Professor of Psychiatry*
Morris Kleinerman, Ch.D., M.B., *Assistant Clinical Professor of Psychiatry*
Elmer Klein, B.S., M.D., *Assistant Clinical Professor of Psychiatry*
Anna Coyne Todd, A.B., M.D., *Assistant Clinical Professor of Psychiatry*
Norman Taub, B.S., M.D., *Assistant Clinical Professor of Psychiatry*
Harold Corson, M.D., *Assistant Clinical Professor of Psychiatry*
Anna Genevieve McEldowney, A.B., M.D., *Associate in Psychiatry*
Sarah Shtoffer Tenenblatt, A.B., M.D., *Associate in Psychiatry*
David Eden, A.B., M.D., *Associate in Psychiatry*
Robert Milton Greenberg, A.B., M.D., *Associate in Psychiatry*
Helen Pallister, Ph.D., *Associate in Psychiatry (Psychology)*
Christopher Theodore Bever, A.B., M.D., *Associate in Psychiatry*
Warren Charles Johnson, B.S., M.D., *Associate in Psychiatry*
Richard Allan Rogers, B.S., M.D., *Clinical Instructor in Psychiatry*
John Anthony Farrell, M.D., *Clinical Instructor in Psychiatry*
Wilmer Deaver Kehne, A.B., M.D., *Clinical Instructor in Psychiatry*
Herman Arnold Meyersburg, B.S., M.D., *Clinical Instructor in Psychiatry*
Samuel Chrabolowski Gordon, M.D., *Clinical Instructor in Psychiatry*
Harold Bernard Lehrman, A.B., M.D., *Clinical Instructor in Psychiatry*
Randolph Adams Frank, A.B., M.D., *Clinical Instructor in Psychiatry*
Maxwell Boverman, A.B., M.D., *Clinical Instructor in Psychiatry*
Helen Glick Pearcy, A.B., M.S.W., *Clinical Instructor in Psychiatry (Social Work)*
Alan McCulloch Drummond, A.B., M.D., *Clinical Instructor in Psychiatry*
George Warren Sprehn, M.D., *Clinical Instructor in Psychiatry*
Norman Charles Rintz, M.D., *Clinical Instructor in Psychiatry*
Leslie Schaffer, M.B., Ch.B., *Clinical Instructor in Psychiatry*

165 *Dynamics of Personality Development* Berman

Fall—1 hour a week.

An orientation course in the anatomical, physiological, and psychological growth and development of personality. Consideration of characteristics of structure, function, and development of the psyche leading to normal behavior as a basis for the study of the pathological. Evaluation of interpersonal relationships.

178 *Psychopathology* Rankin

Spring—1 hour a week.

Manifestations and understanding of various mental mechanisms and abnormal reaction-types, preceded by history of development of psychopathology and illustrated with case material.

266 *Psychiatry* Overholser

Spring—1 hour a week.

History, etiology, symptoms, course, and treatment of the major psychoses with emphasis on the dynamics involving the person as a whole.

268 *Demonstration Clinics* McEldowney, Tenenblatt

Spring—3 hours a week.

Presentation of clinical cases of major mental illnesses and primary behavior disturbances, correlating with Psychiatry 266. Each student examines patients under supervision. St. Elizabeths and D. C. General hospitals.

272 *Psychosomatic Aspects of General Medicine* Ruffin

Spring—1 hour a week.

Somatic disorders of psychogenic origin. The role of personality reactions in functional and organic disorders.

324 *Psychoneurosis* Laughlin

Spring—1 hour a week.

Etiology, psychopathology, clinical aspects, and treatment of various types of psychoneuroses. Medical Conference Room D. C. General Hospital.

431–32 *Clinical Clerkship* The Staff

Three weeks divided service as arranged during academic year.

Supervised examination, diagnosis, and treatment of ambulatory borderline cases in University Hospital and hospitalized cases in St. Elizabeths Hospital. Conferences for discussion of cases. Clinical application of psychiatric principles to general medical practice is stressed. University Hospital Inpatient and Outpatient Psychiatric clinics and St. Elizabeths Hospital.

PSYCHOLOGY

Mitchell Dreese, Ph. D., *Professor of Educational Psychology*
Thelma Hunt, Ph.D., M.D., *Professor of Psychology, Executive Officer*
Henry Furness Hubbard, Ph.D., *Professorial Lecturer in Psychology*
Margaret Ives, Ph.D., *Professorial Lecturer in Psychology*
Elton Barber Whitten, A.M., *Professorial Lecturer in Psychology*
Curtis Edward Tuthill, Ph.D., *Associate Professor of Psychology*
Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
Willard Edmund Caldwell, Ph.D., *Associate Professor of Psychology*
*James Norman Mosél, A.M., *Associate Professor of Psychology*
Josephine Buchanan, A.M., M.D., *Associate Professorial Lecturer in Psychology*
Eva Mayne Johnson, Ph.D., *Assistant Professor of Psychology*
John David Snide, Ph.D., *Assistant Professor of Psychology*
Clyde Joe Lindley, A.M., *Lecturer in Psychology*
William Anstead Hays, A.M., *Lecturer in Psychology*
William Robert Kotapish, A.M., *Associate in Psychology*
Suzanne Doane Hill, A.M., *Associate in Psychology*

Bachelor of Arts with a major in Psychology (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 68, including Psychology 1, and 4 or 22 or 29.

The general requirements for the degree are stated on pages 82–88. The sixty required semester hours must include twenty-four hours in Psychology in addition to those taken as prerequisites, including Psychology 98, 131, 151 or 171, 191, and 196; Statistics 53; and Physiology 115 or Psychology 118.

Master of Arts or *Master of Science in the field of Psychology (Columbian College).*—Prerequisite: the degree of Bachelor of Arts with a major in Psychology at this University, or the equivalent.

Required: the general requirements of Columbian College as stated on pages 89–92. Of the twenty-four required semester hours (exclusive of the thesis), a minimum of eighteen must be in third-group courses; a minimum of twelve must be in psychology, including Psychology 201 and 202; twelve may be in related fields approved by the Department.

Master's programs are available in the following fields of concentration: (1) tests and measurements, (2) counseling and guidance, (3) clinical-abnormal, (4) social, (5) personnel, (6) experimental, (7) personality, and (8) rehabilitation counseling. For detailed requirements consult the Executive Officer of the Department.

Doctor of Philosophy (Graduate Council).—See page 98.

Bachelor of Arts in Government with a major in Business Administration (Personnel Management option) (School of Government).—See pages 186–87, 190.

Master of Arts in Personnel Administration or *Master of Arts in Government with a specialty in Counseling, Psychometrics,* or *International Communicatio (School of Government).*—See pages 193–94, 195, 196–97.

Master of Arts in Education in the fields of Employee Training and of Guidance (School of Education).—Prerequisite: a Bachelor's degree from an accredited institution and two years of successful teaching experience. The requirements for the degree are stated on pages 175–77.

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* On sabbatical leave 1958–59.

First Group

1 *General Psychology* * (3) The Staff

Fall—morning and evening; spring—morning and evening; summer 1958.

The fundamental principles underlying human behavior.

4 *Psychology of Adjustment* (3) The Staff

Fall—morning and evening; spring—morning and evening; summer 1958.

Processes involved in the total adjustment of the individual, with emphasis on social environment; development in the individual of adjustment techniques.

22 *Introduction to Educational Psychology* (3) Lindley, Faith

Fall—evening; spring—morning; summer 1958.

Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training.

29 *Child Psychology* (3) Johnson

Fall—evening; spring—morning; summer 1958.

A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world.

98 *Abnormal Psychology* (3) Hill, Hunt

Fall—morning; spring—morning and evening; summer 1958.

The causes, diagnosis, treatment, and prevention of the various types of maladjustments and mental disorders. Prerequisite: 6 credits in psychology, or 3 credits in psychology and 6 credits in a biological science.

Second Group †

112 *Adolescent Psychology* (3) Johnson

Fall—morning.

Psychological characteristics and problems peculiar to adolescence, with emphasis on applications of psychology to solution of such problems.

118 *Physiological Psychology* (3) Hunt

Spring—evening.

Structure, function, and phylogeny of receptors, nervous system, and effectors as mediators of behavior, including drives, learning, and emotions.

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* Psychology 1 is prerequisite to all other courses in Psychology.

† Six credits in first-group courses are prerequisite to all second group courses.

Faith

121 *Educational Psychology* (3)

Fall—as arranged; spring—as arranged.

Advanced course in educational psychology. Admission by permission of the instructor.

Dreese

129 *Introduction to Counseling and Guidance* (3)

Fall—evening; summer 1958.

A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling.

Hunt, Hill

131 *Psychological Tests* (3)

Fall—morning; spring—evening; summer 1958.

A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, $7.

Faith

141 *Leadership, Group Behavior, and Student Life* (3)

Fall—morning.

A survey of the foundations of leadership, of the factors which underlie effective participation in group activities, and of the interrelations between the student and his university.

Hubbard, Mosél

144 *Personnel Psychology* (3)

Fall—evening; spring—evening; summer 1958.

The applications of psychology to personnel work in education, business, industry, and government.

Mosél

146 *Problems in Human Relations* (3)

Fall—morning; spring—morning; summer 1958 (limited to students in the Engineering Administration program).

The application of psychological principles to understanding and improving personal and group relations. Emphasis will be upon case studies and specific problems drawn from life situations, with important attention to supervisory and administrative relationships. Prerequisite: Psychology 1 (or Psychology 145 for students in the special programs).

Mosél

148 *Psychology of Advertising and Market Research* (3)

1959–60 and alternate years.

The motivational and social dynamics of consumer behavior. Evaluation of the psychological effectiveness of products, media, and advertising and public relations programs. Consideration of current techniques and findings in motivational research.

151 *Social Psychology* (3) Tuthill

Fall—evening; spring—morning; summer 1958.

The social foundations of attitudes and behavior. Individual adjustment to group situations, such as the family, school, fraternity, and occupation. The psychological basis of race prejudice, nationalism, and war.

156 *Psychology of Propaganda and Public Opinion* (3) Tuthill

Spring—evening; summer 1958.

The psychology of opinion formation, the measurement of opinion, the social determinants of attitudes, the psychological processes in propaganda, the bases of receptivity to propaganda, psychological warfare.

161 *Comparative Psychology* (3) Caldwell

1958–59 and alternate years: spring—morning.

A lecture course in animal psychology. Covers psychological processes in infrahuman organisms, evolution of behavior, the place of animal experimentation and research in psychology.

162 *Experimental Comparative Psychology* (3) Caldwell

Fall—as arranged; spring—as arranged.

Opportunity for individual psychological experimentation using lower animals as subjects. Offered on independent study plan. Prerequisite: Psychology 161 and permission of the instructor.

171 *Psychology of Personality* (3) Caldwell

1959–60 and alternate years.

Contemporary approaches to the study of personality. Prerequisite: 12 credits in psychology, including Abnormal Psychology.

191 *Experimental Psychology* (3) Snide

Fall—morning and evening; spring—morning and evening.

The application of experimental methods to various psychological problems. Prerequisite: 12 credits in psychology and an elementary course in statistics. Material fee, $10.

192 *Problems in Experimental Psychology* (3) Snide

Fall—as arranged; spring—as arranged.

Opportunity for work on individual experimental projects. Prerequisite: Psychology 191 and permission of the instructor.

193–94 *Readings in Psychology* (3–3) The Staff

Academic year—as arranged; summer 1958—Psychology 193 (3).

Supervised readings on specific topics in psychology, with conferences, for undergraduate majors. Open only to seniors with 18 or more credits in psychology with a quality-point index of 3.00 or higher. Admission by special permission of the instructor.

Caldwell

196 *History and Systems of Psychology* (3)

Fall—evening.

A survey of the contemporary schools of psychology. Prerequisite 12 credits in psychology.

THIRD GROUP*

Tuthill

201 *Seminar: Advanced General Psychology* (3)

Fall—afternoon; spring—evening.

General review of the field for graduate students with an intensive study of selected problems. Required in all graduate programs.

Snide

202 *Psychological Research Methods and Procedures* (3)

Fall—evening; spring—afternoon.

Required of all Master of Arts candidates in psychology. Prerequisites: Experimental Psychology and an elementary course in statistics.

The Staff

205–6 *Field Work in Psychology* (3–3)

Academic year—as arranged; summer 1958—Psychology 205 (3).

Supervised field work in agencies providing psychological service. Admission by permission of the Executive Officer of the Department.

The Staff

207–8 *Readings in Psychology for Graduate Students* (3–3)

Academic year—as arranged; summer 1958—Psychology 207 (3).

Supervised readings with conferences on specified topics in psychology. Open only to students who have had course work in the field of the readings.

Caldwell

209 *Seminar: Psychology of Motivation* (3)

Spring—evening.

A consideration of various theoretical approaches to the psychology of motivation and systematic concepts and experimental findings deriving from each approach.

212 *Seminar: Personality Evaluation by Projective Techniques* (3)

Spring—evening.

Primary emphasis upon administration and scoring of the Rorschach Test. Prerequisite: Psychology 233.

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* Open only to graduate students with 18 or more credits in psychology, except by special permission of Instructor and Executive Officer of the Department.

213 *Seminar: Clinical Psychology* (3) Ives

Spring—evening.

A study of the clinical applications of nonprojective tests. Prerequisite: Psychology 233.

215 *Seminar: Advanced Study of Projective Techniques* (3) Ives

Fall—evening.

Primary emphasis upon interpretation of the Rorschach Test. Prerequisite: Psychology 212.

220 *Seminar: Abnormal Psychology* (3) Hunt

Fall—evening.

An intensive study of selected problems in the field of abnormal psychology.

221 *Seminar: Psychology of the Handicapped: Dynamics of Adjustment* (3) Hunt

Spring—afternoon.

The dynamics of adjustment and criteria of adjustment in general; the specific problems of adjustment in the handicapped.

222 *Seminar: Rehabilitation Counseling: Orientation and Survey of Field* (3) Whitten

Fall—evening.

Aims, function, and nature of the rehabilitation process; the special problems of counseling the handicapped.

223 *Seminar: Learning* (3) Tuthill

Fall—evening.

Covers theories of learning.

224 *Seminar: Medical Backgrounds for Rehabilitation Counseling* (3) Buchanan

Fall—evening.

An elementary medical survey of the etiology, therapy, and prognosis of various disabling conditions and disorders. Somatic and psychogenic problems in handicaps.

225 *Seminar: Mental Hygiene* (3) Caldwell

Fall—evening; summer 1958.

A study of mental health problems with special attention to programs of prevention.

226 *Seminar: Clinical Psychology of Childhood* (3) Johnson

Spring—evening.

A survey of children's behavior and personality disorders.

227 *Seminar: Counseling and Guidance* (3) Dreese

Spring—evening.

Recent developments and current problems in vocational, educational, and personal guidance in various types of agencies with particular reference to education. Prerequisite: educational or psychological measurements and Psychology 129 or the equivalent.

228 *Seminar: Techniques of Counseling* (3) Dreese

Spring—evening.

Specific types of vocational, educational, and personal counseling problems approached through the case method. Prerequisite: recent previous course in counseling and guidance and familiarity with individual analysis methods.

229 *Seminar: Occupational and Educational Information* (3) Faith

Spring—evening.

Designed to acquaint vocational and educational counselors with the basic occupational and educational information necessary in counseling. Sources of data and techniques of collecting, analyzing, and disseminating for purposes of guidance.

231 *Test Construction* (3) Hunt

Fall—evening.

The principles underlying test construction; statistical techniques in the construction, evaluation, and standardization of psychological, educational, and vocational tests. Prerequisite: a course in tests and measurements and an elementary course in statistics.

232 *Research: Test Construction* (3) Hunt

Fall—as arranged; spring—as arranged.

Individual projects in construction and evaluation of psychological, educational, or vocational tests. Prerequisite: Psychology 231 and permission of the instructor.

233 *Individual Psychological Testing* (3) Johnson

Fall—afternoon; spring—afternoon.

Instruction and practice in giving of the Binet and the Wechsler tests. Prerequisite: an elementary course in tests and measurements. Material fee, $7.

234 *Seminar: Test Theory* (3) Mosél

1958–59 and alternate years: spring—evening.

236 *Seminar: Analysis of the Individual for Purposes of Counseling* (3) Faith

Fall—evening.

A detailed study of individual analysis techniques with practice in handling such methods. Prerequisite: an introductory course in educational or psychological measurements.

244 *Seminar: Job Analysis and Evaluation* (3) Mosél

Summer 1958.

245 *Seminar: Employee Motivation and Morale* (3) Mosél

Spring—evening.

Application of the principles of primary group functioning and group-centered administration to the problem of motivating employees, building morale, and strengthening human relations. Emphasis is upon use of group dynamics in supervision and leadership.

246 *Seminar: Personnel Measurement Techniques* (3) Mosél

Fall—evening.

Detailed consideration of interviews, personal data analysis, tests, ratings, and questionnaires in evaluating employability, job proficiency, and worker morale.

249 *Seminar: Human Engineering* (3) Snide

Fall—evening.

Application of findings and methods of experimental psychology to design and operation of equipment and man-machine systems. Relation of capacities of the operator to information display systems, control mechanisms, work environment, and work methods.

251 *Seminar: Advanced Social Psychology* (3) Tuthill

Fall—evening.

Current research and theory in social psychology; group dynamics, ego-involvements, action research, and social interaction theory.

254 *Seminar: Group Dynamics* (3) Tuthill

1959–60 and alternate years.

The experimental study of small groups; autocratic and democratic group climates; interaction process analysis; Lewin's field-theoretical approach to individual and group processes.

Tuthill

255 *Seminar: Techniques of Opinion and Attitude Measurements* (3)

1958–59 and alternate years: spring—evening.

Methods of attitude measurement (interviews, questionnaires, scales, polls) as currently used by private and governmental investigators. The place of attitude studies in schools, industry, government, etc.

Mosél

261 *Seminar: International Communication* (3)

1959–60 and alternate years:

Caldwell

272 *Seminar: Theories of Personality* (3)

Fall—evening.

A survey of the various theories of personality, with emphasis upon theoretical problems and methodology in the field of personality study.

290–91 *Seminar: Current Research and Theory in Psychology* (3–3)

Fall—evening; spring—evening.

A review and discussion of contemporary research and theory in some advanced and specialized field of psychological study, by leaders in the field. The specific topic and instructor for each semester will be announced in advance of the beginning of the semester.

The Staff

295–96 *Research in Psychology* (arr.)

Academic year—as arranged; summer 1958—Psychology 295 (arr.).

Individual research by student, carried out under supervision of staff member.

The Staff

299–300 *Thesis* (3–3)

Academic year—as arranged; summer 1958—Psychology 299 (3).

COURSE OFFERED IN SPECIAL PROGRAM

In addition to the regular courses announced above the University offers the following course, which is available only to students enrolled in the Engineering Administration program.

145 *Principles of Human Relations* (3)

RADIOLOGY

William Woodrow Stanbro, M.D., *Professor of Radiology, Executive Officer*
Charlotte Patricia Donlan, A.B., M.D., *Associate Clinical Professor of Radiology*
Solomon Rodney Bersack, B.S., M.D., *Assistant Clinical Professor of Radiology*
Harry Jay Kicherer, M.D., *Assistant Clinical Professor of Radiology*
Harry Berman, B.S., M.D., *Assistant Clinical Professor of Radiology*
John Alexander Isherwood, Ph.B., M.D., *Assistant Clinical Professor of Radiology*
Alvin Charles Wyman, A.B., M.D., *Associate in Radiology*
Herman Litwer, M.D., *Associate in Radiology*
Scott Winfield Smith, Ph.D., *Associate in Radiology*
George Tievsky, M.D., *Clinical Instructor in Radiology*
Uthai Vincent Wilcox II, M.D., *Clinical Instructor in Radiology*
Nan Van Wagenen, B.S., M.D., *Clinical Instructor in Radiology*
Charles Malcolm Weber, M.D., *Clinical Instructor in Radiology*

115–16 *Anatomy* The Staff

Academic year—as arranged.

Correlation of gross and Roentgen anatomy.

220 *Principles of Radiology* The Staff

Spring—1 hour a week.

Lectures and discussions.

313 *Advanced Radiological Diagnosis* The Staff

Fall—as arranged.

Lectures and discussions.

421–22 *Clinical Studies* The Staff

Students are assigned to the X-ray Department in rotation on a full-time basis for a specific period.

RELIGION

Joseph Richard Sizoo, A.M., S.T.D., D.D., Litt.D., *Milbank Professor of Religion*
Clifton Earl Olmstead, A.B., Th.D., *Associate Professor of Religion, Executive Officer*
Charles Duell Kean, A.B., S.T.B., D.D., *Lecturer in Religion*
David Hirsh Panitz, A.M., Rabbi, *Lecturer in Religion*
Murray Lee Newman, Jr., A.M., B.D., *Lecturer in Religion*

Bachelor of Arts with a major in Religion (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 68, including Religion 9, 10, and 59–60. Required: the general requirements as stated on pages 82–88, including a minimum of eighteen semester hours in religion beyond first-group courses.

Master of Arts in the field of Religion (Columbian College).—Prerequisite: an undergraduate major in Religion at this University or the equivalent.

Required: the general requirements of Columbian College as stated on pages 89–92. Of the twenty-four semester hours of required courses (exclusive of the thesis), at least twelve must be in third-group religion courses; a maximum of nine may be in a closely related field outside the Department of Religion as approved by the Department.

Master of Arts in the field of Religious Education (Columbian College).—Prerequisite: an undergraduate major in Religion at this University or the equivalent; the following specific courses or the equivalent: Education 109–10; Psychology 1, 22, and 29; Sociology 1; Speech 1 or 11.

Required: the general requirements of Columbian College as stated on pages 89–92. Of the twenty-four semester hours of required courses (exclusive of the thesis), at least six must be in third-group religion courses; a maximum of twelve may be in a closely related field outside the Department of Religion as approved by the Department.

FIRST GROUP

Sizoo and Staff

9 *The Old Testament* (3)

Fall—morning and evening.

A historical and literary approach to the study of the books of the Old Testament with special consideration given to the development of religious ideas, institutions, and outstanding personalities.

Sizoo and Staff

10 *The New Testament* (3)

Spring—morning and evening.

A study of the literature of the New Testament from the standpoint of occasion, purpose, dominant ideas, and permanent values. Special emphasis on the approach, the structure, and the significance of the Gospels and Epistles.

59–60 *History of Religion* (3–3) Olmstead

Academic year—morning and evening; summer 1958—Religion 60 (3).

First half: primitive and ancient national religions; Confucianism, Taoism, Buddhism, Hinduism, and Shintoism—their historical setting, founders, and development of religious thought and culture. *Second half:* Judaism, Christianity, and Islam—analysis of their origin, evolution, and contemporary status.

SECOND GROUP

103 *The Prophets, Their Times and Their Message* (3) Panitz

Fall—morning.

The development of prophetism in the Old Testament; cultural, economic, psychological, and religious factors in the movement; elements of lasting value in the prophetic teaching. A few of the prophets will be selected for particular study.

104 *The Life and Thought of Jesus* (3) Kean

Spring—morning.

A comprehensive study of the life and teachings of Jesus as they relate to problems of belief, standards of value, and patterns of life; the significance of the message of Jesus for our own times.

121 *Problems of Western Religious Thought* (3) Olmstead

Fall—morning; summer 1958.

The nature of religious truth and experience; the existence, character, and activity of God; the predicament of modern man; the problem of evil and suffering; eternal life; science and religion; the meaning of worship; religious views of history.

122 *Christian Ethics and Modern Society* (3) Olmstead

Spring—morning.

The nature and principles of the Christian life as developed by the Christian community; problems of personal conduct; the application of the Christian standard to family, social, and economic institutions.

131 *History of Christianity to the Reformation* (3) Olmstead

Not offered 1958–59.

The rise and expansion of Christianity, the development of Christian thought, the evolution of church organization and worship, the Renaissance and pre-Reformation dissent.

132 *History of Christianity since the Reformation* (3)

Not offered 1958–59.

The origin and development of Protestantism; the Roman Catholic revival; the status of the Eastern churches; doctrines, worship, expansion, church and state, and relation to modern thought and life.

141–42 *Religious Education* (3–3)

Academic year—evening.

Principles and practices of religious education in the home, church, and community; basic educational procedures and special techniques; organization and administration of religious education.

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172 *Religion in American Culture* (3)

Not offered 1958–59.

Growth of religious bodies and institutions in American culture, the heritage of religious freedom and diversity, religion and literature, revivalism and education, science and religious thought, divisions and cooperative movements in religion.

Third Group

209–10 *Seminar in Biblical Literature* (3–3) Newman

Academic year—evening.

The development of religious concepts in the Judaeo-Christian tradition.

231–32 *Seminar in the History of Christian Thought* (3–3) Olmstead

Academic year—as arranged.

An advanced study of the development of Christian thought from primitive beginnings to the present.

241–42 *Seminar in Religious Education* (3–3)

Not offered 1958–59.

Advanced course dealing with some of the major problems in the practice of religious education.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged.

ROMANCE LANGUAGES AND LITERATURES

Antonio Alonso, A.M., *Professor Emeritus of Spanish in Residence*

Merle Irving Protzman, Ph.D., *Professor of Romance Languages*
Alan Thomas Deibert, A.M., *Professor of Romance Languages*
George Elbert McSpadden, Ph.D., *Professor of Romance Languages, Executive Officer*
Rafael Supervía, Doctor en derecho, *Associate Professor of Spanish*
James Willis Robb, Ph.D., *Associate Professor of Romance Languages*
William Graham Clubb, Ph.D., *Associate Professor of French*
Joseph Louis Metivier, Jr., A.M., *Assistant Professor of Romance Languages*
Marcello Arturo Sabatino, D.M.L., *Assistant Professor of Romance Languages*
Guido Ettore Mazzeo, A.M., *Lecturer in Romance Languages*

Bachelor of Arts with majors in (1) *French Literature,* (2) *Spanish American Literature,* and (3) *Spanish Literature (Columbian College—Field-of-Study).*—Prerequisite: the Arts and Letters curriculum in the Junior College.

Required: the general requirements of Columbian College as stated on pages 82–88 and the grade "pass" on the major examination at the end of the senior year. The coordinated field of knowledge upon which the student will be examined includes the political, social, and cultural backgrounds of the literature studied; the writers and their works. A reasonable proficiency in the spoken language is required. Majors in Romance Languages are strongly advised to study Latin, a knowledge of which is required for graduate work in most institutions. The Department of Romance Languages provides a proseminar in each of the major fields intended to assist the student in his preparation for the major examination.

Master of Arts in the fields of (1) *French Literature,* (2) *Spanish American Literature,* and (3) *Spanish Literature (Columbian College).*—Prerequisite: the degree of Bachelor of Arts in the appropriate field from this University, or the equivalent.

Required: the general requirements of Columbian College as stated on pages 89–92. The thirty hours of required work must include a thesis, for which six hours of credit are allotted. The remainder of the program is arranged in consultation with the student's major adviser.

Doctor of Philosophy (Graduate Council).—See page 98.

Bachelor of Arts in Education with teaching fields in French and in Spanish (School of Education).—Prerequisite: the Education curriculum, page 70.

Required: the French option, pages 166–67, or the Spanish option, page 170; the professional courses listed on page 171.

FRENCH

FIRST GROUP

1–2 *First-year French* (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed.

First half: fall—morning and evening; spring—morning and evening; summer 1958. *Second half:* fall—morning; spring—morning and evening; summer 1958.

For beginners. Pronunciation, grammar, composition, reading of modern French prose. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester.

3–4 *Second-year French** (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed.
First half: fall—morning and evening; spring—morning; summer 1958.
Second half: fall—morning; spring—morning and evening; summer 1958.

Advanced grammar and composition, reading in modern French prose, oral practice, introduction to French civilization. Prerequisite: French 1–2 or two years of high school French.

9–10 *French Conversation and Composition* (3–3) The Staff

Academic year—morning and evening; summer 1958.

49 *French Readings for Nonmajor students* (3) Clubb

Fall—evening; spring—evening.

Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students.

51–52 *Survey of French Literature and Civilization** (3–3) Deibert

Academic year—evening.

The social, artistic, and cultural background of French civilization. Lectures, recitations, and informal discussions.

SECOND GROUP *

119–20 *French Literature of the Sixteenth Century* (3–3) Protzman

1959–60 and alternate years.

Prose, poetry, drama, and memoirs of the French Renaissance; Rabelais, Montaigne, Marot, La Pléiade, etc. Class analysis of texts, collateral reading. Recommended: History 120.

121–22 *French Literature of the Seventeenth Century* (3–3) Protzman

1958–59 and alternate years: academic year—evening.

History, philosophy, criticism, memoirs, letters, eloquence, drama, fiction, poetry. Class analysis of texts; collateral reading.

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* French 3–4 is required and French 51–52 is recommended as prerequisite to all second-group courses.

123–24 *French Literature of the Eighteenth Century* (3–3) Deibert

1959–60 and alternate years.

History, philosophy, criticism, letters, drama, fiction, poetry, the "salons", the idea of progress, the idea of science. Class analysis of texts, collateral reading, lectures on literature and history.

125–26 *French Literature of the Nineteenth Century* (3–3) ————

1958–59 and alternate years. Academic year—morning.

Romanticism and realism: fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history.

127–28 *French Literature of the Twentieth Century* (3–3) Clubb

1959–60 and alternate years.

Fiction, poetry, drama, criticism. Class analysis of texts, collateral reading, lectures on literature and history.

199–200 *Proseminar: Readings for the Major in French Literature* (3–3) Clubb

Academic year—as arranged.

Conferences and group discussions.

THIRD GROUP

227–28 *Seminar in Modern French Literature* (3–3) ————

1958–59 and alternate years: academic year—as arranged.

Prerequisite: a second-group course in French literature.

229–30 *Seminar in Classical French Literature* (3–3) Protzman

1959–60 and alternate years.

Prerequisite: a second-group course in French literature.

249–50 *Old French* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1958–59.

Phonology and morphology of Old French, with an outline of its development through Vulgar Latin; survey of French literature to the end of the 13th century. Prerequisite: a second-group course in French literature, an elementary knowledge of Latin.

251–52 *Middle French* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1958–59.

French literature of the 14th and 15th centuries. Class analysis of texts, collateral reading. Prerequisite: a second-group course in French literature. Knowledge of Old French is desirable.

The Staff

299–300 *Thesis* (3–3)

Academic year—as arranged.

PORTUGUESE

First Group

1–2 *First-year Portuguese* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1958–59.

For beginners. Grammar, composition, drill in pronunciation, translation of modern Portuguese prose.

3–4 *Second-year Portuguese* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1958–59.

Advanced grammar and composition, reading of modern Portuguese prose, oral practice, introduction to Portuguese and Brazilian civilization. Prerequisite: Portuguese 1–2 or the equivalent.

Second Group

127–28 *Portuguese and Brazilian Literature* (3–3)

Not offered 1958–59.

Evolution of the Portuguese language; outline of the literature of Portugal (fall semester) and Brazil (spring semester). Lectures, readings, written reports. Conducted in Portuguese. Prerequisite: Portuguese 3–4 or the equivalent.

The Staff

SPANISH

First Group

1–2 *First-year Spanish* (3–3)

A year course: credit is not given for the first half until the second half is completed.
First half: fall—morning and evening; spring—morning and evening;

summer 1958. *Second half:* fall—morning; spring—morning and evening; summer 1958.

For beginners. Pronunciation, grammar, composition, reading of modern Spanish prose. Aural training, oral practice in electronic language workshop. Workshop fee, $6 a semester.

3–4 *Second-year Spanish** (3–3) The Staff

A year course: credit is not given for the first half until the second half is completed.
First half: fall—morning and evening; spring—morning; summer 1958. *Second half:* fall—morning; spring—morning and evening; summer 1958.

Advanced grammar and composition, reading of modern Spanish prose, oral practice, introduction to Hispanic civilization. Prerequisite: Spanish 1–2 or two years of high school Spanish.

9–10 *Spanish Conversation and Composition* (3–3) The Staff

Academic year—morning and evening; summer 1958.

49 *Spanish Readings for Nonmajor Students* (3) Mazzeo, Robb

Fall—evening; spring—evening.

Primarily for graduate students preparing for reading examinations. Undergraduates admitted with permission of the instructor. No academic credit for graduate students.

51–52 *Survey of Spanish Literature and Civilization** (3–3) Supervía

Academic year—morning.

The social, artistic, and cultural background of Spanish civilization. Lectures, recitations, and informal discussion.

Second Group *

121–22 *Spanish Literature of the Golden Age* (3–3) Alonso

Academic year—evening.

Lope de Vega, Calderón; the classic drama, the ballad, lyric poetry. Class analysis of texts, collateral reading, lectures on literature and history.

123–24 *Cervantes: the Prose of the Golden Age* (3–3) McSpadden

1959–60 and alternate years.

Life and works of Cervantes. The *Quixote*, the *Novelas Ejemplares*, and other works.

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* Spanish 3–4 is required and Spanish 51–52 is recommended as prerequisite to all second-group courses in Spanish.

125–26 *Modern Spanish Literature* (3–3) Alonso, McSpadden

Academic year—morning.

Prose and poetry of the 18th and 19th centuries. Class analysis of texts, collateral readings, lectures on literature and history.

127–28 *Contemporary Spanish Literature* (3–3) Supervía

1959–60 and alternate years.

Prose and poetry of the 20th century. Class analysis of texts, collateral reading, lectures on literature and history.

151–52 *The Spanish American Novel* (3–3)

Not offered 1958-59.

Development of the novel in Spanish America. Lectures, collateral reading, and class analysis of texts.

155–56 *Spanish American Literature to 1880* (3–3) Robb

1959–60 and alternate years.

The literature of Spanish America from the colonial period to the latter part of the 19th century. Lectures, collateral reading, reports, and class analysis of important works.

157–58 *Spanish American Literature Since 1880* (3–3) McSpadden, Robb

Academic year—evening.

The literature of Spanish America from 1880 to the contemporary period. Lectures, collateral reading, reports, and class analysis of important works.

197–98 *Proseminar: Readings for the Major in Spanish American Literature* (3–3) Robb

Academic year—as arranged.

Conferences and group discussions.

199–200 *Proseminar: Readings for the Major in Spanish Literature* (3–3) McSpadden

Academic year—as arranged.

Conferences and group discussions.

Third Group

225–26 *Seminar in Spanish Language and Literatures* (3–3) Supervía, McSpadden

Academic year—evening.

Since the topics for Spanish 225–26 vary from year to year, this course may be repeated for credit. The topics for 1958–59 are: *fal* *semester*—Unamuno and Ortega y Gasset; *spring semester*—Problems of Pronunciation and Intonation.

227–28 *Seminar in Spanish American Literature* (3–3)

Not offered 1958–59.

Prerequisite: a second-group course in Spanish American or Spanish literature.

249–50 *Old Spanish* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1958–59.

Literature and philology: ***Poem a del Cid, Libro de Buen Amor, Conde Lucanor,*** etc.; Menéndez Pidal's ***Manual de gramática histórica española*** and Ford's ***Old Spanish Readings.*** Prerequisite: a second-group course in Spanish literature; an elementary knowledge of Latin.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged.

SECRETARIAL STUDIES

Mildred Hollander Shott, A.M., *Associate Professor of Secretarial Studies, Executive Officer*
William Hughes Westbrook, A.B., *Associate in Secretarial Studies*
Leona Fehler Dorsey, A.M., *Associate in Secretarial Studies*

Associate in Arts (Junior College—two-year vocational curriculum in Secretarial Studies).—For curriculum, see pages 74–75.

Bachelor of Arts in Education with at teaching field in Business Education (School of Education).—Prerequisite: the Education curriculum, page 70.

Required: the Secretarial Studies option, pages 164–65 and the professional courses listed on page 171.

First Group

Shott and Staff

1 *Elementary Typewriting* (3)

Fall—afternoon; spring—evening; summer 1958.

Fundamental techniques of typewriting, basic styles of business letters, introduction to tabulation, and preparation of general office forms. Laboratory fee, $7.

Shott and Staff

2 *Intermediate Typewriting* (3)

Fall—afternoon; spring—afternoon and evening; summer 1958.

The business letter and its arrangement, advanced tabulation, manuscript typing, office forms, stencil cutting, and legal documents. Prerequisite: Secretarial Studies 1 or the equivalent; ability to type accurately at 30 words a minute. Laboratory fee, $7.

Shott and Staff

11 *Elementary Shorthand and Transcription* (3)

Fall—morning and evening; spring—evening; summer 1958.

A study of the principles of Gregg shorthand correlated with dictation and transcription. *Minimum* dictation speed of 60 words a minute attained. Laboratory fee, $3.

Shott and Staff

12 *Intermediate Sharthand and Transcription* (3)

Fall—evening; spring—morning and evening.

Review of the principles of Gregg shorthand. Dictation and transcription on general and specialized business subjects. *Minimum* dictation speed of 80 words a minute attained. Prerequisite: Secretarial Studies 11 or the equivalent; ability to take dictation at 60 words a minute. Laboratory fee, $5.

15 *Advanced Shorthand, Typewriting, and Transcription* (3) Shott

Fall—morning.

Dictation and transcription involving vocabularies in specific businesses. *Minimum* speed of 100 words a minute attained in dictation. Prerequisite: Secretarial Studies 12 or the equivalent. Laboratory fee, $5.

16 *Secretarial Shorthand, Typewriting, and Transcription* (3) Shott

Spring—morning.

Dictation and transcription involving vocabularies used in the legal and medical professions. *Minimum* dictation speed of 120 words a minute attained. Prerequisite: Secretarial Studies 15 or the equivalent. Laboratory fee, $5.

51 *Business Correspondence* (3) Shott

Fall—morning.

Development of the technique of effective communication with reference to business letters and forms. Survey and analysis of current business literature.

54 *Secretarial Practice* (3) Shott

Spring—afternoon.

A thorough study of secretarial problems and procedures. Practice in the use of secretarial equipment and supplies. The study of secretarial personality and office relationships.

SLAVIC LANGUAGES AND LITERATURES

Helen Bates Yakobson, B.S., *Assistant Professor of Russian, Executive Officer*
Peter Zouboff, Ph.D., *Lecturer in Russian*

1–2 *First-year Russian* (3–3) Yakobson and Staff

First half: fall—morning and evening; spring—evening; summer 1958. *Second half:* fall—evening; spring—morning and evening; summer 1958.

A beginner's course in fundamentals of grammar and pronunciation with graded reading, oral drill, and written practice.

3–4 *Second-year Russian* (3–3) Yakobson and Staff

First half: fall—morning and evening. *Second half:* spring—morning and evening.

Systematic review of grammar. Study of special problems of Russian morphology and syntax. Oral and written reports on assigned topics.

9–10 *Russian Conversation* (3–3) Yakobson and Staff

Academic year—evening.

101–2 *Rapid Readings in Russian* (3–3) Yakobson

1959–60 and alternate years.

Readings and translations of classic and modern literary texts and periodical literature.

103–4 *Scientific Russian* (3–3) Yakobson

1958–59 and alternate years: academic year—evening.

Reading and translation of technical texts.

SOCIOLOGY

Harold Loran Geisert, Ph.D., *Professor of Sociology, Executive Officer*
Carr Bartleson Lavell, A.M., *Associate Professor of Sociology*
Richard Walton Stephens, Ph.D., *Assistant Professor of Sociology*
Edward Vanstone Pope, B.D., A.M., *Lecturer in Sociology*
Jane Murray Wickey, A.B., M.S.W., *Lecturer in Sociology*

Bachelor of Arts with a major in Sociology (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 68, including Sociology 1–2.

Required: the general requirements of Columbian College as stated on pages 82–88, including Sociology 172 and 181 and eighteen hours in second- or third-group courses in Sociology.

Master of Arts in the field of Sociology (Columbian College).—Prerequisite: the degree of Bachelor of Arts with a major in Sociology in this University, or the equivalent.

Required: the requirements of Columbian Colleges as stated on pages 89–92. The thirty hours of required work must include a minimum of eighteen hours in third-group courses.

FIRST GROUP

1–2 *Man in Modern Society** (3–3) The Staff

First half: fall—morning and evening; spring—morning; summer 1958.
Second half: fall—morning; spring—morning and evening.

Origin and development of culture, the impact of groups and institutions on man's social behavior. Factors producing social problems; individual, community, national and international disorganization.

SECOND GROUP

121 *Cultural Anthropology* (3) Geisert

Fall—morning.

Origins and development of social life and customs, organization and structure of primitive human relationships, the dynamics of culture patterns.

122 *Culture and Personality* (3) Stephens

Spring—morning; summer 1958.

Influences of group membership and cultural conditions on personality; socio-cultural factors in mental health; and the relationship of personality to caste, class, and occupation.

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* Sociology 1 is prerequisite to all other courses in Sociology.

123 *Fields of Social Work* (3)

1959–60 and alternate years.

Introduction to the nature and scope of social work; the development of social work programs; functions of social case work, social group work, and social action.

124 *Public Welfare* (3)

1959–60 and alternate years.

Organization of public welfare—federal, state, and local; the care of various classes of dependents and methods of treatment; personnel, finance, and public relations.

Geisert

126 *Urban Sociology* (3)

Spring—evening.

Factors in the growth of cities: problems of urban living, group life, personality, urban housing, and city planning.

127 *Community Organization* (3)

1959–60 and alternate years.

Social interaction and social disorganization in American communities, dynamics of leadership, methods of organizing social forces to meet community needs.

131 *Social Institutions* (3)

1959–60 and alternate years.

Functional analysis of basic social institutions: family, education, religion, and state in the structure of American society.

Lavell

132 *Courtship and Marriage* (3)

Spring—morning; summer 1958

Dating and courtship as social processes, reasons for marriage, marriage laws, mate selection, factors in marriage adjustment, prediction and counseling.

Geisert

133 *The Family in Modern Society* (3)

Fall—evening.

Historical development of the family as a social institution, parent-child relations, family problems, disorganization and divorce, and family reorganization.

134 *Sociology of Child Development* (3)

1959–60 and alternate years.

Socialization of the child through the home and other social institutions, the changing status of childhood, dependents and handicapped children.

135 *Juvenile Delinquency* (3) Geisert

Spring—morning.

Factors producing delinquency, juvenile detention, the juvenile court, training schools, treatment of offenders.

136 *Criminology* (3)

1959–60 and alternate years.

Nature and distribution of crime, police and court systems, prisons and reformatories, treatment and prevention of crime.

141 *Population Problems* (3) Stephens

Fall—morning.

Composition of populations, trends in population growth and population pressure, factors producing population movements, effects of migration, population policies.

151 *Human Relations in Industry* (3) Lavell

Fall—morning.

Sociological analysis of work situations, occupational mobility, development of the labor movement, industrial leadership and morale.

161 *Social Stratification: Class and Status* (3) Lavell

Fall—morning.

Nature of class structure, patterns of status, prestige relations in American society, differential class behavior, and analysis of comparative social structure.

162 *Social Movements* (3) Lavell

Spring—morning.

Major contemporary movements examined as aspects of social change and collective behavior. Designed to disclose competing ideologies and to show the way in which social movements develop.

164 *Social Control* (3)

1959–60 and alternate years.

Informal and formal phases of human control, analysis of methods of control used in modern society and the situations in which they occur, policies and techniques of control.

172 *Contemporary Social Theory* (3) Stephens

Spring—evening.

Systematic study of the important schools of contemporary sociology, including recent European as well as American developments; an evaluation of the scientific contributions of each school.

181 *Methods of Social Research* (3) Stephens

Fall—evening.

Analysis of social research techniques and the scientific method; application to social data of the case study; social survey; statistical, sociometric, and experimental methods.

221 *Seminar: Current Trends in Sociology* (3) Geisert

Fall—evening.

Analysis and evaluation of recent theories of social systems and an appraisal of the roles of systematic theory in sociology.

222 *Seminar: Anthropological Theory* (3) Geisert

Spring—evening.

Analysis of the theoretical postulates and assumptions underlying the development of modern cultural anthropology; the concepts of culture, cultural dynamics, and cultural integration.

224 *Seminar: Social Case Work for Rehabilitation Workers* (3) Wickey

Spring—evening.

Nature, functions, and techniques for social case work. Interviewing, integration of information about patient or counselee, relationship of social case work to other techniques.

225 *Seminar: Community Organization and Resources* (3) Hays

Fall—evening.

Study of the organization of social agencies in a community, how to use social agencies, problems of interagency cooperation, relationship to rehabilitation counseling.

227 *Seminar: Small Groups* (3)

1959–60 and alternate years.

General characteristics of small groups and their measurement, sociography of groups, evaluation of small group theory and sociometry, other techniques of group research.

228 *Seminar: Mass Communications* (3)

1959–60 and alternate years.

The communication process; barriers to communication; structure and function of communication in society; content, control, support, and effects of mass communication.

295–96 *Research* (arr.) The Staff

Academic year—as arranged; summer 1958.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1958.

SPEECH

Lubin Poe Leggette, A.M., Ed.D., *Depew Professor of Speech, Executive Officer*
Calvin Weir Pettit, Ph.D., *Professor of Speech; Director of Speech Clinic*
George Francis Henigan, Jr., Ph.M., *Associate Professor of Speech*
Edwin Lockwood Stevens, A.M., *Associate Professor of Speech*
Lee Sheward Bielski, A.M., *Assistant Professor of Speech*
Edith Shores Surrey, A.M., *Lecturer in Speech*
Fred Wohlwend Stuart, *Lecturer in Speech*
Andrew Anthony Nilles, A.B., LL.B., *Lecturer in Speech*
Marion Toulmin Gaines III, A.B., *Lecturer in Speech*
Bernard Anderman, A.M., Ed.D., *Lecturer in Speech*
Stanley Louis Berlinsky, Ph.D., *Lecturer in Speech*
Cleo Michelsen, A.M., *Associate in Speech*

Bachelor of Arts with a major in Speech (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 68, including Speech 1, 2, 11, 32.

Required: the general requirements of Columbian College as stated on pages 82–88, including the passing of a speech proficiency test early in the program, Speech 101, 121, 154, 175, and a minimum of twelve additional hours in second-group courses in the speech arts or speech science, as approved by the adviser.

Bachelor of Arts with a major in Dramatic Art (Columbian College—Departmental).—Prerequisite: the Arts and Letters curriculum in the Junior College, see page 68, including twelve hours in the basic courses in speech and six hours in English 51–52. 71–72, or 91–92.

Required: the general requirements of Columbian College as stated on pages 82–88, including the passing of a speech proficiency test early in the program. Speech 101–2, a minimum of nine additional hours in theater arts in the Speech Department and nine hours in dramatic literature in the English Department, as approved by the adviser.

Bachelor of Arts in Education with a teaching field in Speech (School of Education).—Prerequisite: the Education curriculum, page 70.

Required: the Speech option, page 170, and the professional courses listed on page 171.

Master of Arts in the field of Speech Correction (Columbian College).—Prerequisite: the degree of Bachelor of Arts with a major in Speech from this University, or the equivalent.

Required: the general requirements of Columbian College as stated on pages 89–92.

First Group

A *Speech Clinic* Pettit and Staff

Fall—as arranged; spring—evening; summer 1958.

Individual or group lessons, without academic credit, for such speech difficulties as lisping, cleft palate, articulatory problems, and stuttering. Fee: for individual lesson, $7; for group lesson, $4.

Bielski

B *American Speech for Foreign Students* (3)

Fall—evening; spring—as arranged; summer 1958.

Class limited to foreign-born students. Instruction in the formation of the sounds of spoken English, with emphasis on rhythm and inflection. The International Phonetic Alphabet is used. Recording fee, $5.50.

Leggette and Staff

1 *Effective Speaking* (3)

Fall—morning, afternoon, and evening; spring—morning, afternoon, and evening; summer 1958.

Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, $2.

The Staff

2 *Persuasive Speaking* (3)

Fall—evening; spring—morning and evening.

A continuation of Speech 1, which is prerequisite, with emphasis on speech composition and elementary principles of persuasion.

The Staff

11 *Voice and Diction* (3)

Fall—morning, afternoon, and evening; spring—morning and evening; summer 1958.

Developing ease, naturalness, and clarity in the speaking voice. Analysis of individual voices through recordings. Phonetic approach to the study of the sounds of English, the standards of speech. Class instruction in the problems of rate, volume, pitch, and quality. Recording fee, $4.

The Staff

32 *Oral Reading* (3)

Fall—morning; spring—morning and evening; summer 1958.

Reading to others, theory and practice in the problems of interpreting the printed page. Prerequisite: Speech 11 or the permission of the instructor. Recording fee, $4.

SECOND GROUP

Bielski

101 *Voice and Phonetics* (3)

Fall—morning.

The International Phonetic Alphabet and its application to the student's own speech improvement; also personal application to such fields as theater, public speaking, speech correction, radio, television, and foreign languages. Recording fee, $4.

Leggette

102 *Oral Interpretation of Literature* (3)

Spring—afternoon.

Theory and practice in the problems of communicating meaning and emotion. Selections for study include poetry and prose. Prerequisite: Speech 32 or permission of the instructor. Recording fee, $4.

121 *Group Discussion and Conference Leadership* (3) Stevens

Fall—morning; spring—evening; summer 1958.

The process of thinking and problem solving in committees and small groups, and the methods of leading discussions and conferences. Prerequisite: 6 hours of speech or the permission of the instructor.

126 *Public Discussion and Debate* (3) Henigan

Spring—afternoon.

Principles and types of public discussion and debate; practice in argumentative speaking on questions of current interest. Prerequisite: 6 hours of speech or the permission of the instructor.

133–34 *Radio and TV Broadcasting* (3–3) Stuart

Academic year—evening.

A study of the development of the radio and TV industries, station organization and management. equipment, production techniques; practice in the preparation and performance of radio programs. Admission by permission of the instructor Recording fee, $5 a semester.

141 *Speeches for Special Occasions* (3) Henigan

Fall—evening.

The preparation and presentation of speeches for formal occasions with emphasis on the psychology of the audience. Prerequisite: 6 semester hours of speech.

145 *Speech Criticism* (3)

Not offered 1958–59.

A study of rhetorical theory with application to the criticism of representative American and British oratory. Prerequisite: permission of the instructor.

153 *Acting* (3)

Fall—evening. Leggette

Study and practice in the fundamentals of acting technique. Prerequisite: permission of the instructor. Laboratory fee, $5.

154 *Play Production* (3)

Spring—evening. Leggette

Fundamentals of play production. Under the supervision of the instructor, students prepare one-act plays for presentation. Prerequisite: permission of the instructor. Laboratory fee, $5.

155–56 *Play Production Practice* (1–1) The Staff

Academic year—as arranged.

Practical work in theater.

166 *History of the Theatre* (3)

Not offered 1958–59.

A general survey of the rise of the theater, the Classical, Medieval, Renaissance, later English and Continental, and the Modern theater. Admission by permission of the instructor.

Michelsen

169 *Creative Dramatics and Children's Theater* (3)

Spring—evening.

A study of creative dramatics and its use as a learning tool, with problems and experience in producing children's plays.

Pettit

175–76 *Speech Correction* (3–3)

Academic year—evening.

A study of the causes of the disorders of speech with emphasis on methods in diagnosis and treatment of defective speech. Admission by permission of the insructor.

The Staff

177–78 *Clinical Practice in Speech Therapy* (1–1)

Academic year—as arranged; summer 1958.

Supervised case work in remedial speech—the University Speech Clinic, District of Columbia Crippled Children's Society, and Public School system. This course may be repeated for a total of 6 semester hours. Prerequisite: Speech 175.

Anderman

182 *Hearing Problems and the Testing of Hearing* (3)

Fall—evening.

A study of the field of audiology with emphasis on the testing of hearing. Admission by permissiion of the instructor.

Anderman
and Staff

183–84 *Clinical Practice in Hearing Therapy* (1–1)

Academic year—as arranged; summer 1958.

Supervised case work with persons handicapped with hearing losses—the University Speech Clinic, the Washington Hearing Society, and the Veterans Administration Audiology Clinic. This course may be repeated for a total of 3 semester hours. Prerequisite: Speech 182.

The Staff

191 *Proseminar: Speech Correction* (3)

Fall—evening.

THIRD GROUP

276 *Advanced Speech Correction* (3)

Not offered 1958–59.

Prerequisite: Speech 175.

280 *Speech Pathology* (3)

Not offered 1958–59.

An advanced study of the causes and symptoms of the major physiogenic and psychogenic disorders. Admission by permission of the instructor.

284 *Hearing Rehabilitation* (3) Anderman

Spring—evening.

Theory and practice in the following aspects of hearing rehabilitation: speech reading, auditory training, and speech conservation. Admission by permission of the instructor.

286 *Seminar in Speech Pathology* (3) Pettit

Spring—evening.

295–96 *Research in Speech and Hearing* (arr.) The Staff

299–300 *Thesis* (3–3) The Staff

RELATED COURSES IN OTHER DEPARTMENTS

English 125, *Evolution of Modern Speech*

English 135–36, *Shakespeare*

English 175–76, *American Drama*

English 183–84, *English Drama*

Education 133–34, *Observation and Student Teaching*

STATISTICS

Frank Mark Weida, Ph.D., *Professor Emeritus of Statistics in Residence*

Everett Hershel Johnson, Ph.D., *Professor of Statistics, Acting Executive Officer*
Solomon Kullback, Ph.D., *Professorial Lecturer in Statistics*
————————, *Associate Professor of Statistics*
Chester Hayden McCall, Jr., Ph.D., *Assistant Professor of Statistics*
Samuel Greenhouse, A.M., *Lecturer in Statistics*
Raymond Edward Thomas, A.M., *Instructor in Statistics*

Bachelor of Arts or *Bachelor of Science with a major in Mathematical Statistics (Columbian College—Field-of-Study).*—Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 68 and 69. Electives must include Mathematics 12, 19, and 20: Statistics 91–92.

Required: the general requirements of Columbian College as stated on pages 82–88, including Statistics 117, 118, 155–56, 157–58, and 197–98; a minimum of twenty-four semester hours of approved courses in departments in the Division of Mathematics and the Physical Sciences or in departments in the Division of Natural Sciences or in departments unrelated to Statistics; and the grade of "pass" on the major examination at the end of the senior year. For further details, consult the adviser.

Master of Arts or *Master of Science in the field of Mathematical Statistics (Columbian College).*—Prerequisite :a Bachelor of Arts or Bachelor of Science degree, respectively, with a major in Statistics at this University, or the equivalent.

Required: the general requirements of Columbian College as stated on pages 89–92. The required twenty-four semester hours, in addition to a thesis in Statistics, include at least twelve hours to be selected from approved third-group courses in Statistics. The remaining twelve hours may be selected from graduate work offered by departments in the Division of Mathematics and the Physical Sciences or by departments in the Division of the Natural Sciences with the approval of the adviser.

Doctor of Philosophy (Graduate Council).—See page 99.

Bachelor of Arts in Government and *Master of Arts in Government with a major in Business and Economic Statistics (School of Government).*—See pages 186–87, 191; 193–94, 196.

First Group

51 *Introduction to Business and Economic Statistics* (3)

The Staff

Lecture (2 hours), laboratory (2 hours).
Fall: lecture—morning and evening, laboratory—afternoon and evening; spring—morning and evening; summer 1958.

Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data; consideration of characteristic values; measures of variability, sampling processes, index numbers, time series analysis, and simple correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, $9.

52 *Mathematics of Finance* (3) The Staff

Fall—morning and evening; spring—morning, afternoon, and evening; summer 1958.

Interest and discount, annuities, valuation of stocks and bonds, sinking funds, amortization, valuation of depletable assets, depreciation, building and loan associations. Prerequisite: one entrance unit in algebra.

53 *Introduction to Statistics in Psychology and Education* (3) The Staff

Lecture (2 hours), laboratory (2 hours).
Fall: lecture—morning and evening, laboratory—afternoon and evening; spring—morning; summer 1958.

Sources of data, tabulation, charts and graphs, averages, dispersion, quartiles and percentiles, raw scores and derived scores, profiles, norms and their use, frequency distributions, intelligence and other quotients, reliability and validity of tests, normal curve, correlation, elementary sampling, statistical error, limitations of statistics. Prerequisite: one entrance unit in algebra. Laboratory fee, $9.

91 *Principles of Statistical Methods I** (3) Thomas

Fall: lecture (2 hours), laboratory (2 hours)—evening; summer 1958.

The meaning, uses, and applications of: variates and attributes; measurement and enumeration; averages and dispersion; frequency distributions and their characteristics; errors of measurement and their control; purposive and random sampling in theory and practice and their errors and estimates. Prerequisite: one entrance unit in algebra. Laboratory fee, $9.

92 *Principles of Statistical Methods II** (3) Thomas

Spring: lecture (2 hours), laboratory (2 hours)—evening; summer 1958.

Correlation theory and applications, power functions; Type I and II errors; introduction to analysis of variance; and the making of statistical decisions. Prerequisite: Statistics 91 or the equivalent. Laboratory fee, $9.

SECOND GROUP

105 *Statistics in Psychology and Education* (3) McCall

Spring: lecture (2 hours), laboratory (2 hours)—morning.

Advanced study of statistical techniques necessary for an application of statistics in research problems. Analysis of variance, correlation techniques, chi-square applications, and sampling theory. Applications to specific problems utilizing case method of study in so far as possible. Original work is required of each student. Prerequisite: Statistics 53. Laboratory fee, $9.

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* Statistics 91 and 92 are for Statistics majors, for students in engineering and in the biological and physical sciences.

McCall

106 *Factor Analysis* (3)

Fall—morning.

Matrix theory and linear algebras as applied to factor analysis, introduction to the concepts of factor analysis, their utility in various phases of research. Case method of study applied in so far as possible. Original work is required of each student. Prerequisite: Statistics 53 or the equivalent.

109 *Managerial Statistics* (3)

Not offered 1958–59.

Role of statistics and the contribution of statistical procedures in various phases of business management with emphasis on the need for and usefulness of the statistical method rather than the mechanics of analysis. Subject matter comprises sources and methods for collecting data, effective forms of presentation, techniques for summarizing and analyzing quantitative and qualitative information, interpretation of and inferences from available data. Admission by permission of the instructor or following Statistics 51.

110 *Quality Control Techniques* (3)

Not offered 1958–59.

Characteristics; scientific basis; reduction in cost of inspection, rejections, and tolerance limits; quality as an attribute; distribution of quality characteristics; laws basic to control; statistical and maximum control; detection of lack of control. Admission by permission of the instructor or following Statistics 51.

Johnson

111 *Business and Economic Statistics I* (3)

Fall—morning and evening.

Statistical processes as related to particular types of problems encountered in business administration and economic research. Subject matter comprises characteristic values, measures of variability, sampling processes, sampling distributions, and simple correlation. Admission by permission of the instructor.

Johnson

112 *Business and Economic Statistics II* (3)

Spring—morning and evening.

Application of statistical methods to specific problems of business administration and economics. Subject matter comprises multiple and partial correlation, time series analysis, index numbers, business cycles, demand functions, and depreciation schedules. Prerequisite: Statistics 111 or the equivalent.

117 *Analysis of Variance I* (3) Thomas

Fall—evening; summer 1958.

The analysis of variance to segregate factors producing significant variation; a method to estimate experimental error, multiple classifications, Latin Square, Greco-Latin Square, factorials; an introduction to model theory. Applications are stressed. Prerequisite: Statistics 91 and 92.

118 *Correlation and the Chi-square Test I* (3) Thomas

Spring—evening; summer 1958.

A study of simple, partial, and multiple correlation. Rank correlation, the method of contingency, and analysis of covariance. Tests of independence, likeness, and goodness of fit. Applications are stressed. Prerequisite: Statistics 91 and 92.

121 *Index Numbers* (3) The Staff

Fall—morning.

Definition and theory of index numbers, methods of construction, their interpretation, use, and limitations. Prerequisite: Statistics 51 or the equivalent.

122 *Business Conditions, Forecasting Principles and Techniques* (3) The Staff

Spring—morning.

Survey and appraisal of techniques for measuring the state of business conditions and an examination of current indicators. Study of procedures for estimating future values, namely, budget requirements, price levels, or level of general business activity. Prerequisite: Statistics 51 or the equivalent.

155–56 *Mathematical Probability* (3–3) McCall

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

Definitions, enumeration of cases, total and compound probability, repeated trials, Bayes' theorem and postulate, Bernoulli's theorem and its experimental verification, mathematical expectation, law of large numbers and its applications. Prerequisite: Mathematics 20 and Statistics 91 and 92.

157–58 *Mathematical Statistics* (3–3) McCall

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

Statistics as a science, types of problems, relative frequency and probability, binomial and multinomial distributions, Pearson system of curves, Gram-Charlier series, Cauchy distribution, correlation by regression method, Lexis theory of dispersion, generating functions, simple sampling theory, moments and semi-invariants. Prerequisite or concurrent registration: Statistics 155–56.

195–96 *Reading and Research in Business and Economic Statistics* (3–3) Johnson

Academic year—as arranged.

Admission by permission of the instructor.

197 *Statistical Mathematics I** (3) Greenhouse

Fall—evening.

Research problems in statistics with the development of processes from modern algebra necessary as a tool for their solution. Prerequisite: Mathematics 20 or the equivalent.

198 *Statistical Mathematics II** (3) Greenhouse

Spring—evening.

Research problems in statistics with the development of processes from analysis necessary as a tool for their solution. Prerequisite: Mathematics 20 or the equivalent.

199–200 *Proseminar: Theoretical and Applied Statistics* (3–3)

Academic year—as arranged.

In addition to the study of recent advances in statistical methods, this course is designed to coordinate the content of the baccalaureate major. Admission by permission of the instructor.

THIRD GROUP *

201 *Design of Experiments* (3)

Not offered 1958–59.

Relative merits of random, repeated, stratified, and double sampling; Fisher-Pitman method of randomization; randomized blocks; Latin squares; factorial design; confounding, partial confounding.

202 *Theory of Estimation and Testing Hypotheses* (3)

Not offered 1958–59.

Statistical hypotheses; maximum likelihood estimate; Markoff's best estimate; Neyman-Pearson theory of testing hypotheses; Bayes' theory; consistent, efficient, and sufficient statistics; theory of confidence intervals.

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* Statistics 197 and 198 are prerequisite to all third-group courses.

203–4 *The Theory of Econometrics* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1958–59.

Statistical methods applied to analysis of production, supply, and demand; utility and disutility; interest and taxation; exchange. Emphasis on interpretation of results in terms of probability, correlation, and regression of time series. Admission by permission of the instructor.

205–6 *Advanced Business and Economic Statistics* (3–3)

Not offered 1958–59.

Application of statistical methods to specific problems utilizing case method when possible. Emphasis on source materials, role of statistical methods, techniques of analysis, interpretation and presentation of results. Original work is required of each student. Prerequisite: Statistics 112 or the equivalent.

207 *Operations Analysis* (3)

Not offered 1958–59.

Basic concepts and techniques of operations analysis as applied to problems in business management and economic research. An introduction to the processes of linear programming, game theory, and queuing theory. Admission by permission of the instructor.

217 *Analysis of Variance II* (3)

Not offered 1958–59.

Advanced theory of the applications of the linear hypothesis to research problems. Distributions of the analysis of variance. Extensions to multiple classifications with unequal cell frequencies. Studies of multiple contrasts and their importance. Normal versus non-normal problems.

218 *Correlations and the Chi-square Test II* (3)

Not offered 1958–59.

Theoretical analysis of simple, partial, and multiple regression. Examination of various distributions encountered. Rank correlation techniques and their distributions. Distribution of the chi-square statistics.

257–58 *Advanced Mathematical Statistics* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1958–59.

Mathematical basis of distribution functions, moments and cumulants, probability and likelihood, sampling distributions exact and approximate. Chi-square distribution, association and contingency, various conceptions of correlation, individual difference problem, time series, regression analysis, analysis of variance, theories of inference.

259–60 *Advanced Mathematical Probability* (3–3)

Kullback

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

Modern theories and asymptotic laws; elementary theory of definite integration; limit theorems in probability; the contributions of Cramér, Frechet, Kolmogoroff, Khintchine. Prerequisite: Statistics 257–58 or the equivalent.

263–64 *Statistical Inference* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1958–59.

Sample space; methods for estimating population parameters; fiducial inference and its application to testing hypotheses; valid, efficient, and exact estimation; Students' distribution; variance distribution; sampling statistics, i.e., moments and cumulants used as estimates of population parameters and used to test hypotheses. Prerequisite or concurrent registration; Statistics 257–58 or the equivalent.

265–66 *Multivariate Analysis* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1958–59.

Tests of significance, generalized variance and covariance, tests of independence, canonical and vector correlations, multivariate, normal distribution, generalized Student's ratio, problems of estimation, applications to factor analysis.

267–68 *Characteristic Functions* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1958–59.

Fourier integrals, set functions, inversion formulas, limit theorems, applications to the distribution problem in statistics.

Kullback

269–70 *Sequential Testing and Statistical Decision Theory* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Academic year—evening.

Efficiency of sequential tests, sequential probability ratio test, expected number of observations necessary for a decision, truncated sequential analysis, sequential tests of single and composite hypotheses, general structure of statistical games, invariance principle in statistical games, optimal strategies, estimation for statistical decision.

271–72 *Statistical Information Theory* (3–3)

A year course: credit is not given for the first half until the second half is completed.
Not offered 1958–59.

Basic concepts, definitions, and formulas of information theory; their significance and general properties. Shannon's coding theorem, channel capacity, and transmission of information; inequalities of information theory and sufficiency; applications to statistical problems of discrimination and hypothesis testing; asymptotic distribution theory of information; analysis of contingency tables; loss of information due to grouping and sequential analysis; comparison of experiments.

295–96 *Reading and Research* (3–3) The Staff

Academic year—as arranged.

Admission by permission of the instructor.

299–300 *Thesis* (3–3) The Staff

COURSES OFFERED IN SPECIAL PROGRAMS

In addition to the regular courses announced above the University offers the following courses for students enrolled in the following special programs: Navy Graduate Comptrollership Program, Air Force Advanced Management Program, and Engineering Administration.

101 *Basic Principles of Statistical Methods* (3)

Variables and attributes, measurement and counting, averages and dispersion, laws and behavior obtained from observation, errors of measurement, and elementary principles of sampling.

119 *The Bases of Statistical Decision Making* (arr.)

Introduction to the techniques of decision making, with emphasis on applications rather than theory. Includes: binomial distribution, normal distribution, Type I and II errors, estimation, research methodology, and problems of inference.

120 *Principles of Statistical Analysis* (3)

Introduction to the basic concepts of statistical analysis, measures of central tendency, dispersion, normal distribution, basic statistical inference including estimation and testing hypotheses. Examples utilizing actual case studies in so far as possible.

262 *Managerial Statistics and Quality Control* (3)

The application of statistical principles and practices to management and quality control. Emphasis is placed on the use of statistical techniques in making management decisions, controlling quality and standardization.

SURGERY

Brian Blades, A.B., M.D., *Professor of Surgery, Executive Officer*
Arch Lockhart Riddick, B.S., M.D., *Clinical Professor of Surgery*
John Gordon Lee, A.B., M.D., C.M., Med. Sc.D., *Clinical Professor of Surgery*
William Stanley McCune, A.B., M.D., *Clinical Professor of Surgery*
Vincent Michael Iovine, B.S., M.D., *Clinical Professor of Surgery*
Calvin Trexler Klopp, A.B., M.D., *Warwick Associate Professor of Surgery (Cancer)*
Herbert Hermann Schoenfeld, M.D., *Associate Clinical Professor of Surgery*
Alec Horwitz, M.S., M.D., *Associate Clinical Professor of Surgery*
John Pletch Adams, B.S., M.D., *Associate Clinical Professor of Orthopedic Surgery*
Owen Gwathmey, A.B., M.D., *Assistant Professor of Surgery*
Howard Clemeth Pierpont, A.B., M.D., *Assistant Professor of Surgery*
Paul Charles Adkins, A.B., M.D., *Assistant Professor of Surgery*
Benjamin Franklin Dean, Jr., M.S., M.D., *Assistant Clinical Professor of Surgery*
Carl Berg, M.D., *Assistant Clinical Professor of Orthopedic Surgery*
Julius Salem Neviaser, A.B., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
Jerome Blaine Harrell, M.D., *Assistant Clinical Professor of Surgery*
Leonard Theodore Peterson, B.S., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
Gordon Sparks Letterman, B.S., M.D., *Assistant Clinical Professor of Surgery*
Henry Leon Feffer, A.B., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
James Richard Thistlethwaite, B.S., M.D., *Assistant Clinical Professor of Surgery*
William Ross Morris, M.D., *Associate in Surgery*
Jacob Joseph Weinstein, B.S., Phar.G., M.D., *Associate in Surgery*
William Carey Meloy, M.D., M.S. in Med., *Associate in Surgery*
Edward Alexander Cafritz, M.D., *Associate in Surgery*
Karl Hayden Wood, Phar.G., D.D.S., *Associate in Dental Surgery*
Isabella Harrison, A.B., M.D., *Associate in Surgery*
Nicholas Patrick Dillon Smyth, M.B., Ch.B., *Instructor in Surgery*
Crenshaw Douglas Briggs, B.S., M.D., *Clinical Instructor in Surgery*
Joseph Francis Conlon, D.D.S., *Clinical Instructor in Dental Surgery*
Duane Case Richtmeyer, A.B., M.D., *Clinical Instructor in Surgery*
Leon Gerber, M.D., *Clinical Instructor in Surgery*

Thomas Bradley, A.B., M.D., *Clinical Instructor in Surgery*
Ernest Alva Gould, B.S., M.D., *Clinical Instructor in Surgery*
Austin Bertram Rohrbaugh, Jr., A.B., M.D., *Clinical Instructor in Orthopedic Surgery*
Marvin Hayne Kendrick, A.B., M.D., *Clinical Instructor in Surgery*
Brooks Gideon Brown, M.D., *Clinical Instructor in Surgery*
John Decator Hoyle, B.S., M.D., *Clinical Instructor in Surgery*
Robert Roland Smith, B.S., M.D., *Clinical Instructor in Surgery*
Norman Harry Isaacson, A.B., M.D., *Clinical Instructor in Surgery*
Charles Stanley White, Jr., B.S., M.D., *Clinical Instructor in Surgery*
Dennis Parfrement McCarty, M.D., *Clinical Instructor in Surgery*
John Mark Keshishian, M.D., *Clinical Instructor in Surgery*
Maxine Ann Schurter, A.B., M.D., *Clinical Instructor in Surgery*
Theodore Crandall Alford, A.B., M.D., *Clinical Instructor in Surgery*
William Albert Spencer, A.B., M.D., *Clinical Instructor in Surgery*
Robert LeRoy Dow, A.B., M.D., *Clinical Instructor in Orthopedic Surgery*

101–2 *Surgical Anatomy I* Surgery and Anatomy Staffs

Academic year—1 hour alternate weeks, as arranged.

Clinics illustrating relationship between gross anatomy and clinical surgery. University Hospital.

280 *Introduction to Surgery* The Staff

Spring—1 hour a week.

Lectures and recitations covering the field of general surgery.

284 *Surgical Physiology* The Staff

Spring—2 hours a week.

A clinical and laboratory course with particular emphasis on applied physiology.

323–24 *Surgical Pathology I* Weiss

Academic year—1 hour a week.

Weekly conferences are held with the student group assigned to the surgical clerkship, reviewing surgical specimens.

373–74 *Clinical Clerkship I* The Staff

Academic year—as arranged.

The student is assigned and required to work up thoroughly the cases for diagnosis and treatment. D. C. General Hospital.

375–76 *Outpatient Surgical Clinic* The Staff

Forty hours as arranged during academic year.

Surgical clinic. D. C. General Hospital.

377 *Fractures and Orthopedics* The Staff

Fall—1 hour a week.

Lectures covering the field of fractures and orthopedics. D. C. General Hospital.

379–80 *Lectures in Surgery* The Staff

Academic year—1 hour a week.

D. C. General Hospital.

383–84 *Surgical Clinic* Blades

Academic year—1 hour a week.

Demonstration of various surgical diseases to the entire class. University Hospital.

473–74 *Clinical Clerkship II* The Staff

Academic year—in rotation.

Six weeks, University Hospital; three weeks, Mt. Alto Hospital.

479–80 *Surgical Staff Conferences* The Staff

Academic year—Wednesday as arranged.

University Hospital.

483–84 *Surgical Ward Rounds* Blades

Academic year—1 hour a week.

Demonstration of various surgical diseases to fourth-year clerks. University Hospital.

491 *Surgical Anatomy II* Horwitz and Staff

Fall—1 hour a week for twelve weeks in rotation.

Lectures for fourth-year clerks. University Hospital.

492 *Surgical Pathology II* Newman

Spring—1 hour a week.

A systematic study of the gross and microscopic changes in the organs and tissues commonly removed surgically.

UROLOGY

Frederick A. Reuter, M.D., *Professor of Urology, Executive Officer*
Edward Egner Ferguson, M.D., *Associate Clinical Professor of Urology*
Leon Richard Culbertson, B.S., M.D., *Associate Clinical Professor of Urology*
William Dabney Jarman, B.S., M.D., *Assistant Clinical Professor of Urology*
Gilbert Ottenberg, A.M., M.D., *Associate in Urology*
Gordon Rhodes MacDonald, B.S., M.D., *Associate in Urology*
Frederick Turner Reuter, M.D., *Associate in Urology*
Herbert DeGrange Wolff, Jr., M.D., *Clinical Instructor in Urology*
Hamilton Peacock Dorman, B.S., M.D., *Clinical Instructor in Urology*
Arthur Wilets, A.B., M.D., *Clinical Instructor in Urology*

395–96 *Clinic*

The Staff

Clinical teaching and demonstrations on the care of urological cases with special emphasis on the pre- and post-operative management. Operative clinics and clinical teaching. D. C. General Hospital.

397 *Urology*

F. A. Reuter and Staff

Fall—1 hour a week.

Lectures covering the entire field of urology including diagnosis, treatment, and morbid pathology.

495–96 *Clinic*

F. A. Reuter and Staff

Three hours a week, in rotation, as arranged during academic year.

Clinical demonstrations, teaching in the Outpatient Department, and urological X-ray conferences, with special attention given to diagnostic procedures. University Hospital.

ZOOLOGY*

Ira Bowers Hansen, Ph.D., *Professor of Zoology, Executive Officer*
Edith Elizabeth Mortensen, Ph.D., *Professor of Zoology*
Kenneth Casper Kates, Ph.D., *Professorial Lecturer in Zoology*
Alton Harold Desmond, Ph.D., *Assistant Professor of Zoology*

Bachelor of Arts or *Bachelor of Science (Columbian College—Field-of-Study).* —Prerequisite: the Arts and Letters or the Science curriculum, respectively, in the Junior College, see pages 68–69. The following first-group courses must be included: Zoology 1–2 and Chemistry 11–12.

Required: the general requirements of Columbian College as stated on pages 82–88, and the grade "pass" on the Zoology major examination at the end of the senior year. The correlated knowledge upon which the student will be examined includes the following fields: (1) classification, structure, and ecological relations of animals, both invertebrate and vertebrate; (2) embryological development and life histories of important animal types; (3) general principles of physiology, heredity, and evolution; (4) the development of biological principles, hypotheses, and theories as revealed in the study of the history of zoology.

Master of Arts or *Master of Science in the field of Zoology (Columbian College).*—Prerequisite: the degree of Bachelor of Arts or Bachelor of Science, respectively, with a major in Zoology at this University, or the equivalent.

Required: the general requirements of Columbian College as stated on pages 89–92.

Doctor of Philosophy (Graduate Council).—See page 99.

First Group

Mortensen, Hansen

1–2 *Introduction to Zoology* (4–4)

Academic year: lecture (2 hours)—morning and evening, laboratory (4 hours)—morning, afternoon, and evening; summer 1958.

An introduction to the study of the structure, functions, and relation of animals, and of the fundamental biological principles involved. Material fee, $11 a semester.

Desmond

41–42 *Comparative Vertebrate Anatomy* (3–3)

Lecture (1 hour), laboratory (4 hours).
1958–59 and alternate years: academic year—morning and evening;
1959–60 and alternate years: academic year—morning.

Lectures on the organ systems of the vertebrates, laboratory dissections of types. Prerequisite: Zoology 2. Material fee, $11 a semester.

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* See also the departments of Biology and Botany.

SECOND GROUP

101–2 *Invertebrate Zoology* (3–3) Mortensen

Lecture (1 hour), laboratory (4 hours).
1958–59 and alternate years: academic year—evening; 1959–60 and alternate years: academic year—afternoon.

A systematic study of invertebrate forms, including the morphology, classifications, life histories, and phylogenetic relationships. Occasional field trips. Prerequisite: Zoology 1–2 or Biology 1–2. Material fee, $8 a semester.

105 *Entomology* (3) Munson

Lecture (1 hour), laboratory (4 hours).
1959–60 and alternate years.

A study of the elementary morphology, physiology, and ecology of insects, with an introduction to the taxonomy of the more important groups. Prerequisite: Zoology 1–2 or the equivalent. Material fee, $8.

138 *Histology* (3) Desmond

Lecture (1 hour), laboratory (4 hours).
1958–59 and alternate years: spring—afternoon; 1959–60 and alternate years: spring—evening.

An introduction to the microscopical anatomy of normal tissues and organs. Prerequisite: Zoology 1–2. Material fee, $11.

145 *Introduction to Vertebrate Embryology* (3) Hansen

Lecture (1 hour), laboratory (4 hours).
1958–59 and alternate years: fall—afternoon; 1959–60 and alternate years: fall—evening; summer 1958.

Origin and early development of the individual, formation of organ systems. Emphasis on the frog, chick, and pig, with reference to the human embryo. Prerequisite: Zoology 2 or the equivalent. Material fee, $11.

152 *Protozoa* (3) Mortensen

Lecture (1 hour), laboratory (4 hours).
1959–60 and alternate years.

Introduction to the protozoa: classification, life histories, and physiology, with special emphasis on free-living types. Prerequisite: Zoology 1. Material fee, $8.

156 *Parasitology* (3) Kates

Lecture (1 hour), laboratory (4 hours).
1959–60 and alternate years.

An introduction to the study of animal parasitology, with a survey of parasitic types from protozoa through arthropods. Prerequisite: Zoology 1–2 or the equivalent. Material fee, $11.

162 *Insect Physiology* (3) Munson

1959–60 and alternate years.

Lectures and laboratory work on the physiology of insects. Admission by permission of the instructor. Material fee, $11.

171–72 *Special Problems* (3–3) The Staff

Academic year—as arranged.

Written approval of the instructor is required. Material fee, $11 a semester.

199–200 *Proseminar* (3–3) The Staff

Academic year—morning and evening.

Designed to correlate and supplement the work of Zoology majors.

Third Group

204 *Seminar in Invertebrate Zoology* (3) Mortensen

Spring—evening.

A study of original publications on hormones of invertebrate animals.

214 *Advanced Invertebrate Zoology* (3)

Not offered 1958–59.

Lectures and laboratory work on problems in invertebrate physiology. Prerequisite: Zoology 1 and 101–2 or the equivalent. Material fee, $8.

247–48 *Morphogenesis* (3–3) Hansen

1958–59 and alternate years: academic year—evening.

Lectures and class reports on experimental morphology. Prerequisite: Zoology 41–42 or the equivalent.

251 *Seminar in Vertebrate Zoology* (3) Desmond

Not offered 1958–59

295–96 *Research* (arr.) The Staff

Academic year—as arranged; summer 1958—Zoology 295 (3).

Investigation of special problems.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged; summer 1958—Zoology 299 (3).

STUDENT LIFE

STUDENT LIFE

LIVING ACCOMMODATIONS

The University maintains four residence halls. Meals are served at the Student Union.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance. Forms for application, together with detailed information, may be obtained from the Director of Activities for Women, Woodhull House, 2033 G Street NW. or the Director of Activities for Men, Building Q, 2029 H Street NW.

Information concerning private rooming and boarding facilities near the University, for women students twenty-one years of age or older and for men students, may be obtained at the Housing Office, Lisner Auditorium. The reservation of rooms in private houses must be made by students.

All girls (except freshmen) under the age of twenty-one, who are enrolled for twelve or more semester hours of academic work at the University and who are not living with their parents or relatives, may live outside the dormitory only with the permission and approval of the Director of Activities for Women, and upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitories except with persons approved by the Director of Activities for Women.

Freshman girls may be domiciled outside the dormitory only with their parents or with immediate relatives with the written approval of their parents.

Women Students.—The Hattie M. Strong Hall provides single rooms at $40 a month and double rooms at $35 a month a person.

Dolly Madison Hall provides double rooms at $35 a month a person.

Men Students.—Welling Hall provides double rooms for $30 a month a person.

John Quincy Adams Hall provides 69 double rooms each with study alcove and bath. Rooms rent for $37.50 a month a person.

STUDENT UNION

The Student Union, 2125 G Street NW., is the center for student life. From the cafeteria on the first floor to the reading room on the fourth floor, it is well planned to meet the students' need for meals, study, recreation, and activities. In addition to the recreation lounge and social lounge the Student Union provides office space for the Student Council and for the other major student organizations.

The Student Activities Office, also in the Student Union, has available information concerning the student organizations and campus events.

HEALTH SERVICES

For details concerning the health service program of the University, see "Health Administration", pages 215–16.

RELIGIOUS LIFE

The University recognizes the contribution that religion makes to the life of its students and encourages them to participate in the various religious organizations of their own choice. Catholic, Jewish, and Protestant bodies sponsor these groups and form a link between the University and the religious community. The advisers of the religious organizations are available for counseling.

UNIVERSITY CHAPEL

The University Chapel is maintained as a nonsectarian service of worship for the University community. The service is held Wednesday of each week from 12:10 to 12:30 o'clock at 1906 H Street NW. Among the guest speakers are representative clergymen of Washington. The Director of Chapel is available for consultation on personal problems.

THE PLACEMENT OFFICE

The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full-time or part-time temporary or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration.

Students and alumni interested in placement are asked to register in person at the Office and to select from written descriptions of current openings positions for which they wish referral. Those interested in planning careers are invited to study the information on career fields and the brochures of business and industrial organizations, government agencies, etc., which are on display in advance of campus visits by recruiting officers. The services of the Counseling Center (see pages 219–20) are available to students and alumni wishing career guidance.

The Placement Office is open from 9:00 A.M. to 5:00 P.M., Monday through Friday. Interviews for referral are held from 9:00 A.M. to 1:00 P.M.

INTERNATIONAL HOUSE

International House, 2110 G Street NW., is the social center for students from foreign countries. A series of teas, dances, and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home in the University.

The International Students' Society welcomes as members students from other lands as well as North American students.

The Adviser to Students from Foreign Countries, whose office is in International House, is available for advice and guidance.

STUDENT ACTIVITIES

The University offers a comprehensive program of Student Activities planned to provide a variety of social and recreational experiences which complement the academic offerings.

DIRECTORS OF STUDENT ACTIVITIES

The University maintains the offices of the Director of Activities for Men and the Director of Activities for Women, for the guidance of students in all nonacademic phases of student life, such as student activities, social life, and housing. The directors are available for individual counseling concerning personal adjustment to university life.

STUDENT GOVERNMENT

Student Council

The University believes in encouraging the development of a sense of civic responsibility in its students by delegating to them such authority in student activities as is consistent with established policy and regulations. To this end, the organization of the University includes the Student Council, which, under the guidance of the Directors of Student Activities, is responsible for the conduct of all student activities. The Student Council is elected annually by the student body.

Committee on Student Life

The Committee on Student Life is the judicial branch of the student government. It is composed of not more than seven members of the faculty, two of whom are the Director of Activities for Men and the Director of Activities for Women, appointed by the President of the University, and the following members: President of the Student Council, an Editor of the *Hatchet*, President of Mortar Board, President of Omicron Delta Kappa, President of the Interfraternity Council, and President of Panhellenic Council. This Committee has the power to review the acts of all student organizations, including the Student Council, and set aside acts that are contrary to established policy and regulations of the University or the Committee.

Approval of Student Organizations.—This Committee is granted authority to approve or disapprove the establishment of any proposed organization on campus. No student club or society (except social fraternities, sororities, scholastic honor societies, religious or professional clubs or societies) organized as a branch or affiliate of a non-George Washington University organization will be recognized by the Committee on Student Life.

ELIGIBILITY FOR STUDENT ACTIVITIES

Any student registered in The George Washington University is eligible to participate in nonathletic student activities of the University; however, a student having a scholastic average of less than 2.00 is not eligible to be:

1. A member of the Band, Dance Production groups, Enosinian Debate Society, Glee Club, Cheerleaders, Student Council, Religious Council, Panhellenic Council, Interfraternity Council, Engineers' Council, Student Life Committee, or any publications staff.
2. An officer, permanent committee chairman, or member of the executive board of any activity.

The rules and policies of the Southern Conference govern participation in intercollegiate athletics.

The control and administration of all student activities are outlined in a separate bulletin called "Rules and Regulations Governing Student Activities."

SPORTS ACTIVITIES

The University is a member of the Southern Conference and the National Collegiate Athletic Association. Its teams participate in intercollegiate contests in football, basketball, baseball, tennis, golf, rifle, sailing, and crew.

The University maintains a complete program of intramural sports for both men and women. The men's program is conducted by the Intramural Council. The Women's Athletic Association and Intersorority Athletic Board cooperate with the department of Physical Education in conducting the women's intramural and informal extra-mural sports program in tennis, hockey, basketball, rifle, swimming, golf, bowling, and badminton.

Other sports activities are included in the Fencing Club, Sailing Association, and the Rowing Club.

ARTS

The University offers an opportunity for interested students to participate in dance, drama, forensics, and music through the following organizations: Dance Production Groups I, II, III; Enosinian Debate Society; University Dramatic Production Group; and University Glee Club. Each of these groups presents programs during the academic year.

With the cooperation of the Curator of Art, an annual student art exhibit is presented.

ANNUAL EVENTS

Colonial Program.—The Student Council sponsors a series of ten cultural programs to which all students are invited.

Recreation Program.—The Student Council and the Dance Production Groups arrange dances—square, folk and social—at frequent intervals for all students.

Homecoming.—Scheduled about the middle of the Fall Semester, Homecoming is the primary festive period of the school year. It includes the annual Pep Rally and Variety Show, the homecoming football game, and the homecoming dance.

The Winter Weekend.—In true Mardi Gras spirit, this function includes a jazz concert and a masquerade ball.

The Activities Fair.—Early in the Spring Semester, all campus activities entertain the freshmen in the Lower Lounge of Lisner Auditorium, with exhibits and demonstrations. Here new students meet older students with similar interests.

Career Conference.—Under the sponsorship of the Student Council, guest speakers from many professions explore annually with students the potentialities of vocations available on graduation.

May Day.—This is the traditional time for the award of honors in student activities. Mortar Board and Omicron Delta Kappa announce and present their new members.

The Colonial Cruise.—An afternoon and evening cruise on the Potomac in the late spring. Students, alumni, and faculty picnic, dance, and engage in games and athletic contests.

STUDENT ORGANIZATIONS

HONOR SOCIETIES

Phi Beta Kappa.—A national honor society recognizing "outstanding intellectual capacity well employed" in the field of liberal arts and sciences. Senior and junior students who are candidates for the degree of Bachelor of Arts or Bachelor of Science in Columbian College (in exceptional cases, senior and junior students in other nonprofessional divisions of the University) and who have shown broad cultural interests, distinguished scholarly achievement, high character, general promise, and scholarly ideals may, to a number not exceeding 15 per cent of a class, be elected to membership by the Faculty members of the Alpha Chapter of the District of Columbia.

Sigma Xi.—A national scientific honor society, the purpose of which is to encourage original investigation in science pure and applied. Outstanding graduate students in the sciences are eligible for full membership, and undergraduates who have shown marked ability in research may be elected to associate membership.

Alpha Kappa Delta.—A national sociology society.

Alpha Lambda Delta.—A national fraternity established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman women who attain a scholastic average of at least 3.50.

Alpha Omega Alpha.—A national honor medical society.

Alpha Pi Epsilon.—A home economics fraternity.

Arnold Air Society.—A national Air Force ROTC society for advanced cadets.

Delphi.—An intersorority society.

Delta Sigma Rho.—A national forensic society.

Gate and Key.—An intrafraternity society.

Iota Sigma Pi.—A national chemical society for women.

Mortar Board.—A national society for senior college women, stressing leadership, scholarship, and service.

Omicron Delta Kappa.—A national fraternity emphasizing leadership in extracurricular activities.

Order of Scarlet.—A service honorary society for sophomore and junior men.

Order of the Coif.—A national legal society, the purpose of which is to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship. Members are elected each year from the highest 10 per cent of the graduating class of the Law School.

Pershing Rifles.—A national Air Force ROTC society for basic cadets.

Phi Epsilon Phi.—A national botany fraternity.

Phi Eta Sigma.—A national fraternity, established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman men who attain a scholastic average of at least 3.50.

Pi Delta Epsilon.—A national collegiate journalism fraternity.

Pi Gamma Mu.—A national social-science society.

Psi Chi.—A national psychology fraternity.

Rho Chi Society.—A national pharmaceutical society.

Sigma Alpha Eta.—A national speech and hearing society.

Sigma Pi Sigma.—A national physics fraternity.

Sigma Tau.—A national engineering fraternity, the purpose of which is to recognize scholarship and professional attainment.

Smith-Reed-Russell Society.—A scholastic society in the School of Medicine. Students of the third and fourth years who maintain a scholastic average of 86 per cent are eligible for associate membership.

Tassels.—A service honorary society for sophomore women.

William Beaumont Medical Society.—A society founded with the object of encouraging and stimulating medical students in work of individual investigation.

PROFESSIONAL ORGANIZATIONS

Alpha Chi Sigma (chemistry), Alpha Kappa Psi (commerce and economics), Alpha Zeta Omega (pharmacy), American Institute of Electrical Engineers—Institute of Radio Engineers (student chapter), American Pharamaceutical Association (student branch), American Society of Civil Engineers (student chapter), American Society of Mechanical Engineers (student chapter), Delta Phi Epsilon (foreign service), Delta Theta Phi (law), Foreign Service Club, Kappa Beta Pi (law), Kappa Psi (pharmacy), National Student Education Association, Nu Sigma Nu (medicine), Phi Alpha Delta (law), Phi Chi (medicine), Phi Delta Delta (law), Phi Delta Epsilon (medicine), Phi Delta Gamma (graduate), Phi Delta Kappa (education), Phi Delta Phi (law), Pi Lambda Theta (education), Society for the Advancement of Management (student chapter), Theta Tau (engineering).

SOCIAL FRATERNITIES

Sigma Chi, Kappa Sigma, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Phi Epsilon, Phi Alpha, Sigma Nu, Acacia, Tau Kappa Epsilon, Pi Kappa Alpha, Tau Epsilon Phi, Alpha Epsilon Pi, Delta Tau Delta, Kappa Alpha.

SOCIAL SORORITIES

Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Kappa Delta, Phi Sigma Sigma, Zeta Tau Alpha, Kappa Kappa Gamma, Delta Gamma, Kappa Alpha Theta, Deuterons.

DEPARTMENTAL CLUBS

Art Club; Case Club; Chemistry Club; El Club Español; Engineers' Council; Enosian Debating Society; Home Economics Club; Howard E. Kane—A.F.A. King Obstetrical Society; Le Cercle Français; Lester F.

Ward Sociological Society; Pharmacy Council; Phi Sigma Rho (philosophy); Schoenfeld Verein; Student Bar Association.

RELIGIOUS ORGANIZATIONS

Baptist Student Union, B'nai B'rith Hillel Foundation, Canterbury Club, Christian Science Organization, Lutheran Student Association, Newman Club, Religious Council, Student Christian Fellowship, Wesley Club, Westminster Foundation.

STUDENT PUBLICATIONS

Amicus Curiae (Law School publication), *The Cherry Tree* (the annual), *The University Hatchet* (weekly newspaper), *The George Washington Law Review*, *Mecheleciv* (engineers' publication), *The Percolator* (pharmaceutical publication).

OTHER ORGANIZATIONS

Adams Hall Council, Alpha Theta Nu (scholarship winners), Big Sisters, Cheerleaders, Colonial Boosters, Current Events Club, Flying Sponsors, Interfraternity Council, Interfraternity Pledge Council, Interlaw Fraternity Council, International Relations Club, International Students' Society, Junior Panhellenic Association, Madison Hall Council, Old Men, Senior Panhellenic Association, Strong Hall Council, Student Council, Student Legal Aid Society, University Band, Wandering Greeks, Writers' Club.

INDEX

INDEX

A

Absence, regulations concerning
  SEE Attendance
Academic Council, xxi–xxii
Academic status of the University, 7
Accounting:
  Associate in Arts curriculum in, 73
  Bachelor of Arts in Government curriculum in, 72, 190–91
  Courses in, 225–29
  Master of Arts in Government curriculum in, 193–94, 196
Activities, student, 475–77
  SEE ALSO Special Bulletin
Administration, Officers of, xix–xx
Administrative Assistants, lxxxix–xcvii
Administrative Units, 213–20
Admission, 13–23
Adult education, 6, 202–4, 205
Advanced standing, 14–15, 17, 18, 20, 144, 175
Advertising, courses on, 256, 338, 426
Advisory system:
  In the Division of Special Students, 207
  In the Junior College, 63
  In the School of Engineering, 136
Air Force:
  Advanced Management Program, 201
  Reserve Officers Training Corps
    SEE Reserve Officers Training Corps
  Resources Management Program, 201
Air Science:
  Courses in, 230–32
  Division of, 208–10
American Institute for Property and Liability Underwirters, Inc., 201
American Literary and Cultural History, Master of Arts field in, 88–92, 307
American Thought and Civilization, major in, 82–85, 86–88, 306–7
Anatomy:
  Courses in, 233–34
  Doctoral Research in, 96
Anesthesiology, courses in, 235
Annual events, student, 477
Aptitude tests, 14, 64, 219–20
Army Logistics Research Project, lxxxviii
Art, courses in, 236–39
Arts and Sciences, College of, 76–92
Attendance, 48, 53
  SEE ALSO College, Schools, and Divisions
Auditor, 27, 50, 51
Awards, 38–46

B

Bacteriology:
  Courses in, 240–43
  Doctoral research in, 96–97
Biochemistry:
  Courses in, 244–45
  Doctoral research in, 97
Biology:
  Courses in, 246–47
  Doctoral research in, 97
Botany:
  Courses in, 248–51
  Doctoral research in, 97
Buildings of the University, 9–11
Business Administration:
  Bachelor of Arts in Government curriculum in, 72, 189–90
  Courses in, 252–62
  Degree of Doctor of, 199–200
  Degree of Master of, 199

C

Calendar for 1958–59, vii–xi
Cancer Detection Clinic, 111
Cartography:
  Bachelor of Science Curriculum in
    SEE special bulletin of the College of General Studies
  Courses on, 315–16, 317
Changes in program of studies, 50–51
Chapel, 474
Chemistry:
  Courses in, 266–71
  Doctoral research in, 97
Chemotherapy, Master of Science field in, 88–92
Civil Engineering:
  Courses in, 272–76
  Curriculum in, 140–41
Classical Languages and Literatures, courses in, 278–79

Classification of students, 23, 65, 81–82, 125
College Entrance Board examinations, 14
Colleges, Schools, and Divisions, 5–6, 57–211
Columbian College (senior college of liberal arts), 76–92
  Entrance requirements, 16–17, 68–69
Commencement
  SEE Graduation
Commercial Art, courses on, 239
Committees:
  Of the Board of Trustees, xvii–xviii
  Of the Faculty, xxiii–xxv
  SEE ALSO UNDER Colleges, Schools, and Divisions
Community Services, College of General Studies Division of, 204
Comprehensive Problem, requirements for, 53–54, 145, 147
Comptrollership, School of Government special program in, 201
Contents, Table of, v–vi
Continuing Legal Education, 19, 129
Convocation
  SEE Graduation
Counseling:
  Center, 219–20
  Courses on, 296, 426, 429, 430, 431
  Master of Arts in Government curriculum in, 196
Course numbers, explanation of, 223–24
Courses of instruction, 221–470
Credit:
  Explanation of amount of, 224
  Toward a degree, 51
    Transfer of:
      For professional courses:
        Toward a degree in Columbian College, 13–14, 14–15, 83
        Toward a degree in the professional schools, 13–14, 14–15, 17, 18, 20
      For summer school work, 51
      From other institutions, 13–14, 14–15, 17, 18, 20
    Within the University, 50–51, 84

D

Dance:
  Courses on, 396, 397, 403, 404
  Production Groups, 477
Dean's List, Junior College, 66
Degrees:
  Associate in Arts, 66–75
    In Accounting, 73
    In Secretarial Studies, 73, 74–75
  Associate in Science, 66–67, 73–74
    In Home Economics, 73
    In Medical Technology—Basic Course, 74
    In Physical Sciences, 74
  Bachelor of Arts, 82–85, 86–88
    In Education, 70, 163–71
    In Government, 72–73, 186–92
  Bachelor of Civil Engineering, 138–41
  Bachelor of Electrical Engineering, 138–41, 142
  Bachelor of Laws, 125–28
  Bachelor of Mechanical Engineering, 138–41, 142–43
  Bachelor of Science, 82–85
    In Engineering, 138–41, 143–44,
    In Home Economics, 70–71, 162–63, 171–72
    In Pharmacy, 69–70, 152–55
    In Physical Education for Men, 71, 162–63, 172–73
    In Physical Education for Women, 71, 162–63, 173–74
  Combined Bachelor of Arts and Doctor of Medicine, 82, 83–84, 114
  Doctor of Business Administration, 199–200
  Doctor of Education, 179–80
  Doctor of Juridical Science, 130
  Doctor of Philosophy, 96–100
  Juris Doctor, 125–28
  Master of Arts, 88–92
    In Education, 174–79
    In Government, 194–97
    In Personnel Administration, 192–94, 198–99
    In Public Administration, 192–94, 197–98
  Master of Business Administration, 192–94, 199
  Master of Comparative Law, 130
  Master of Engineering Administration, 144–45, 147–48
  Master of Laws, 129
  Master of Science, 89–92
    In Engineering, 144–47
    In Pharmacy, 156–57
Dermatology, courses in, 280
Dishonesty, regulations concerning, 49
Dissertations, requirements for, 53–54

- Distinction, degrees with, 54, 75, 114, 126
- Distinguished Air Force ROTC Cadet, 54–55
- Distinguished Air Force ROTC Graduate, 55
- Dormitories, 473
- Dramatic Art, major in, 451
- Dramatic Production Group, 477
- Dramatics, courses on, 153–54
- Drawing, courses on, 238–39
- Dropping courses, 49–50

E

- Economic Policy, Master of Arts in Government curriculum in, 195
- Economics:
  - Courses in, 281–87
  - Doctoral research in, 97
- Education:
  - Courses in, 288–300
  - School of, 158–80
    - Entrance requirements, 21, 70–71
  - Teaching fields, 163–70
- Educational Facilities of the University, 9–12
- Educational objectives
  - See under Colleges, Schools, and Divisions
- Electrical Engineering:
  - Courses in, 300–306
  - Curriculum in, 140–41, 142
- Electronics Research Project, lxxix
- Eligibility for student activities, 476
- Emeritus Faculty, xxvi–xxviii
- Employed students, amount of academic work, 65, 81, 122, 136–37, 151–52, 161, 185
- Employment, student, 474
- Endowment of the University, 4
- Engineering:
  - Courses in, 272–77, 300–305, 357–64
  - School of, 131–48
    - Entrance requirements, 19–20
- Engineering Administration:
  - Courses in, 360–64
  - Master's field in, 144–45, 147–48
- Engineering Science, courses on, 276–77
- English:
  - Correct use of, 64, 84, 139
  - Courses in, 306–14
  - Doctoral research in, 98
  - Placement examination, 64, 308
  - Requirements, 67
- Entrance requirements, 15–23
- Examinations, 49
  - College Entrance Board, 14
  - For admission, 14
  - For placement in language courses, 64
  - For qualifying for advanced standing or waiving curriculum requirements, 75, 84, 191–92
    - See also University Calendar
  - Graduate Record, 14, 53, 84–85, 144, 192
  - Physical, 51–52, 114, 215–16, 394, 400
  - Scholastic Aptitude, 14, 64, 219–20

F

- Faculty:
  - Alphabetical list, xxix–lxxviii
  - Standing committees, xxiii–xxv
- Fees and financial regulations, 25–28
- Fellowships, 29–30
- Finance, courses on, 101–2
- Financial aid, 47
- Foreign Affairs:
  - Bachelor of Arts in Government curricula in, 72, 187–88
  - Master of Arts in Government curricula in, 194–95
- Foreign Commerce, Bachelor of Arts in Government specialization in, 190
- Foreign language:
  - Examinations:
    - For Master's candidacy, 90–91
    - Placement, 64
  - Requirements, 67
- Foreign Service, Curricula in
  - See Foreign Affairs
- Foreign students, 130, 475
- Fraternities, social, 479
- French:
  - Courses in, 437–40
  - Doctoral research in, 98
  - Examinations:
    - For Master's candidacy, 90–91
    - Placement, 64

G

- General Studies, College of, 202–4
- Geography:
  - Courses in, 315–19
  - Doctoral research in, 97
- Geology, courses in, 320–23
- Germanic Languages and Literatures:
  - Courses in, 324–25

Examination:
  For Master's candidacy, 90–91
  Placement, 64
Glee Club, 47
Government Management Intern Scholarship program, 200–201
Government of the University, 8
Government, School of, 181–201
  Entrance requirements, 22, 72–73
  Special programs, 200–201
Grades, 48–49, 113, 124
Graduate Council, 93–102
  Fields of research, 96–99
Graduate Record Examinations, 14, 53, 84–85, 144, 192
Graduate Study, 5–6, 88–92, 96–100, 114–15, 128–30, 144–48, 155–57, 174–80, 192–200
  See also Degrees
Graduation:
  Application for, 52
  Dates
    See University Calendar
  Requirements, 52–55
Greek, courses in, 278–79
Guidance, courses on, 296, 426, 428, 429, 430, 431
Gynecology, courses in, 373–75

H

Health Administration, 215–16
Health services, student, 215
History:
  Courses in, 326–32
  Doctoral research in, 97
  Of the University, 3–4
Home Economics:
  Associate in Science curriculum in, 73
  Bachelor of Science curriculum in, 70–71, 171–72
  Courses in, 333–36
Honor Roll, Junior College, 66
Honor Societies, 477–79
Honors, 54–55, 75, 114, 126, 137–38
Honors List, School of Engineering, 137–38
Hospital, University, 9, 110
Hospitalization, 215–16
Hours of instruction, 120–21, 223
Human Resources Research Project, lxxx–lxxxvii
Hygiene, courses in, 240–43, 395, 397, 401, 404

I

Independent study plan, 82, 186
"In residence status", 26, 53
Instructional Divisions, 6–7
Insurance, courses on, 254–55, 344
Intern and Resident Training, 114–15
International House, 8, 475
International Law, courses on, 344, 348, 350, 418, 420
International Relations
  See Foreign Affairs

J

Journalism, courses in, 337–39
Junior College, 59–75
  Entrance requirements, 15–16

L

Labor, courses on, 253–54, 259, 283, 286, 344, 346, 350
Language placement examinations, 64
Language requirements, 67
Languages and Literatures, Division of, 6–7
Latin, courses in, 278
Latin America, courses on, 284, 287, 329, 331, 332, 418, 420
Latin American Civilization:
  Columbian College major in, 85, 86–87
  Master of Arts field in, 88–92
Law:
  Courses in, 340–52
  Curriculum, 126–28
  Graduate program, 128–30
  Review, 121, 126
  School, 117–30
    Entrance requirements, 18–19
  Unclassified students in, 19, 120, 125
Leave of absence, 52–53
Liberal Arts, College of, 76–92
Library, 11–12, 55
  Hours, 12
  Law, 11, 121
  Medical, 11, 110
  Regulations, 55
Literature and Language, Doctoral research in, 98
Loan funds, 47
Location:
  Of the School of Medicine, 10
  Of the University, 7–8

Logistics Research Project, lxxix–lxxx
Lost and Found Office, 55

M

Major fields in Columbian College, 85–88
Marketing, courses on, 255–56, 258, 260, 426
Mathematical and Physical Sciences, Division of, 6–7
Mathematics:
  Courses in, 353–56
  Doctoral research in, 98
Mechanical Engineering:
  Courses in, 357–60
  Curriculum in, 140–41, 142–43
Medical privileges, 215
Medical Technologist course, 115–16
  Basic course, 73, 74
Medicine:
  Courses in, 365–70
  School of, 103–16
    Entrance requirements, 17
Military honors, 54–55
Musical organization, 477

N

Natural Sciences, Division of, 6–7
Neurology and Neurological Surgery, courses in, 371–72

O

Objectives, educational
  See under Colleges, Schools, and Divisions
Obstetrics, courses in, 373–75
Ophthalmology, courses in, 376
Order of the Coif, 122, 478
Organizations, student, 477–80
Otolaryngology, courses in, 377
Outpatient Department, University Hospital, 9, 111

P

Painting, courses on, 238–39
Patent Law, 127
Patent, Trade-Mark, and Copyright Foundation, office of, 11
Patent, Trade-Mark, and Copyright Law, research in, 351
Pathology, courses in, 378–79
Pediatrics, courses in, 380–82
Personnel Administration:
  Courses on, 254, 259, 263, 264, 265, 426, 431
  Master of Arts curriculum in, 198–99
Pharmacology:
  Courses in, 383–84
  Doctoral research in, 98
Pharmacy:
  Courses in, 385–90
  Curriculum in, 69–70, 153–55
  School of, 149–57
    Entrance requirements, 20–21, 69–70
Phi Beta Kappa, 477–78
Philosophy, courses in, 391–93
Physical Education:
  Courses in:
    For men, 394–99
    For women, 400–405
  Curricula:
    For men, 71, 172–73
    For women, 71, 173–74
  Requirements, 51–52
Physical examination, 51–52, 114, 215–16, 394, 400
Physical Medicine and Rehabilitation, courses in, 406
Physics:
  Courses in, 407–11
  Doctoral research in, 98
Physiology:
  Courses in, 412–13
  Doctoral research in, 98
Placement:
  Office, 474
  Tests, 64, 308
Political Science:
  Courses in, 414–21
  Doctoral research in, 98
Portuguese, courses in, 440
Post-doctoral study, 100–101
Premedical curriculum, 17, 69
Preventive Medicine, courses in, 240–43
Prizes, 38–46
Probation:
  See under Colleges, Schools, and Divisions
Professional organizations, 479
Property, responsibility for, 55
Psychometrics, Master of Arts curriculum in, 196–97
Psychiatry:
  Courses in, 422–23
  Doctoral research in, 98

Psychology:
  Courses in, 424–32
  Doctoral research in, 98
Public Administration:
  Courses in, 252–53, 262–65, 417
  Master of Arts curriculum in, 197–98
Public Affairs:
  Bachelor of Arts in Government curriculum in, 72, 188–89
  Master of Arts in Government curriculum in, 195
Public Law, research in, 129
Public Relations:
  Courses on, 339
Publications, student, 480

Q

Qualifying examinations, 75, 84, 191–92
  See also in University Calendar
Quality-point index, 49

R

Radiology, courses in, 433
Reading Clinic, 204, 219, 289, 294, 298
Recreation, Physical Education specialty in, 172, 173, 174
Refunds, 27–28
Registration, 24, 52–53
Regulations, 48–55
  See also under Colleges, Schools, and Divisions
Religion:
  Courses in, 434–36
  Master of Arts field in, 88–92, 434
Religious Education, Master of Arts field in, 88–92, 434
Religious organizations, 480
Research:
  Consultants in, 94–96
  Fields of, 96–99
  Laboratory, The George Washington University, lxxxvii
  Projects, lxxix–lxxxviii, 7
Reserve Officers Training Corps:
  Air Force Unit, 23, 44–46, 50, 51–52, 54–55, 208–10
  Training Certificate requirements, 230
Residence:
  Halls, 473
  Requirements, 52–53
    See also under Colleges, Schools, and Divisions
Resident Training, medical, 114–15

Romance Languages and Literatures:
  Courses in, 437–43
  Doctoral research in, 98
  Examinations:
    For Master's candidacy, 90–91
    Placement, 64
Rules of the University, right to change, 55
Russia, courses on, 283, 286, 328, 33
  415
Russian, courses in, 446

S

Scholarship, 48–49
  See also under Colleges, Schools, and Divisions
Scholarships, 30–38
Scholastic Aptitude tests, 14, 64, 220–21
Sculpture, courses on, 239
Secretarial Studies:
  Associate in Arts curriculum in, 73, 74–75
  Courses in, 444–45
Self-help, 474
Semester hours, explanation of, 224
Semester hours, maximum allowed full- and part-time students
  See under Colleges, Schools, and Divisions
Sigma Xi, 478
Slavic Languages and Literatures courses in, 446
Social Sciences, Division of, 6–7
Sociology, courses in, 447–50
Sororities, 479
South America, courses on
  See Latin America
Spanish:
  Courses in, 440–43
  Doctoral research in, 98
  Examinations:
    For Master's candidacy, 90–91
    Placement, 64
Special Students, Division of, 206–7
Speech:
  Clinic, 219, 451, 454, 455
  Courses in, 451–55
Staff of Instruction, alphabetical list, xxix–lxxviii
Statistics:
  Business and Economic:
    Bachelor's curriculum, 72–73, 191
    Master's curriculum, 196

  Courses in, 456–63
  Doctoral research in, 99
Student:
  Activities, 475–77
    SEE ALSO Special Bulletin
  Bar Association, 122
  Employment, 474
  Life, 471–80
  Organizations, 477–80
  Publications, 480
  Union, 473–74
Summer Sessions, 211
Surgery, courses in, 464–66
Suspension
  SEE UNDER Colleges, Schools, and Divisions
Syphilology, courses in, 280

T

Testing Center, University, 219–20
Theater, courses on, 453–54
Thesis, requirements for, 53–54
Transcripts of record, 26, 51
Transfer within the University, 50–51
Transportation, courses on, 254, 257, 258, 275
Trustees:
  Board of, xv–xvi
  Committees of the Board of, xvii–xviii
Tuition, 25

U

University Students, Division of, 205
Urology, courses in, 467

V

Veterans Education, 217–18
Vocational Counseling Center, 219–20

W

Warnings, 67, 138
Withdrawal, 27–28, 49–50

Z

Zoology:
  Courses in, 468–70
  Doctoral research in, 99

THE UNIVERSITY RECORD

SUMMER TERM 1957
FALL AND SPRING SEMESTERS 1957–58

DEGREES CONFERRED

JUNIOR COLLEGE

ASSOCIATE IN ARTS

OCTOBER 19, 1957

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Marcia Barrett (With distinction)	D.C.
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Harold Martin Bornstein	N.J.
Donald deForest Boyer	Md.
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Samuel Heffner Brown	Md.
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Trinh Van Chan	Viet Nam
In Sook Chung	Korea
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FEBRUARY 22, 1958

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JUNE 4, 1958

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Joseph Grossman	N.J.
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Ross Edward Heasley	D.C.
Joan Harriet Hecht	Va.
John Hugh Henry	Ark.
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Marion Elwin Hoar	Md.
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Marilyn Joan Hogenson	D.C.
(With distinction)	
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Louise Clark Huston	Va.
(With distinction)	
Richard Leo Hutsko	Pa.
Bradley Beecher Irish	Maine
(With distinction)	
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Adrian Forrest Jewell	Va.
Charles Olof Johnson	Va.
Patricia John Kallis	Md.
Joan Ellen Kaplan	D.C.
Letty Katz	Md.
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Charles Harry Kent	Va.
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Lawrence Klein	D.C.
(With distinction)	
Samuel Ralph Knisley, Jr.	Md.
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Nancy Jean Koontz	D.C.
(With distinction)	
Morton Kousen	Md.
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William Thomas LaCorte	Va.
Harry Jennings Leach, Jr.	Va.
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Saul Eugene Leibowitz	Va.
Nancy Ruth Leppert	D.C.
Miriam Levitan	D.C.
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Thomas Francis Lindsey	Va.
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Joyce Huff Lofmark	Va.
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Sarah Anne Ludlow	Va.
Joan Elizabeth Luks	Va.
Richard Sides Lykes	Texas
Elsie Kathryn Mandis	Va.
(With distinction)	
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Oscar Mann	D.C.
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George Washington Market III	Pa.
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Janet Marie Martinez	D.C.
Gilbert Louis Maton	Va.
Marcia MacGregor Mayer	N.Y.
Roland Edward McDaniel	Md.
Howard Victor McDonald	W.Va.
Sandra Kay McDowell	Pa.
Margaret M. McHale	Pa.
Sheila Lee McKeown	D.C.
Joseph Donald McLaughlin, Jr.	D.C.
(With distinction)	
Timothy Dean Mead	Mich.
Gilbert Hancock Mende	Va.
Mary Helen Mikulka	D.C.
Joseph Adolph Miller	Md.
Jean Mollohan	D.C.
Roger Owen Moore	Ohio
Warren Edson Moore	Va.
Sara Lucretia Moses	Va.
Roy Joseph Maquin	Va.
Thomas Hugh Neuhauser	Md.
Jean Stuart Newell	D.C.
Robert Harry Nolde	Md.

James Henry Noone	Md.
June Anne Nordahl	D.C.
Angela Ann Obermeier	Ill.
Elizabeth Hanahan Oliver	D.C.
Barbara Mary O'Neill	Mass.
Stanley William Orlinsky	N.J.
Mary Kay Patterson	Va.
Lowell David Peart	D.C.
Patricia Ann Pflieger	D.C.
Barbara Bones Phillips	D.C.
Patricia Elizabeth Pierson	Va.
Betty Pitt	D.C.
Clarence Paul Plumb, Jr.	W.Va.
Albert Bates Porter	Va.
Vicki Lynn Powers	Ill.
Stella Janie Pridgen	Va.
Martha Raye Propst (With distinction)	Md.
Barbara Joan Ramage	Md.
Barbara Ann Reedy	Va.
Martin Hugh Reichgut (With distinction)	D.C.
Neal Evan Reid	Va.
Barbara Helen Reinwald	D.C.
Aaron Oscar Richman	D.C.
Annette Reiger	Va.
Adah Frances Riley	D.C.
Robert Holden Roach	D.C.
Jeanette Robbin	D.C.
Barbara Alice Romaniello	Fla.
Suzanne Rome	D.C.
Carmel Latell Romeo	Va.
John Joseph Rooney	Md.
James Edward Roper (With distinction)	D.C.
Alessandro Rossi	D.C.
Jasper Warner Rothuizen	D.C.
Robin Louise Rule	Va.
Vernon Kenneth Sandin	D.C.
Shirley Marcia Saslaw	Va.
Shielamarie Mary Schiffmann	Va.
Karen Lani Schlageter	Va.
Alan Richard Schneider	N.Y.
Carlyle William Schock	D.C.
Isabelle Sweeny Schuessler	Md.
Alexandra Howell Scott	D.C.

Edna Jean Serber (With distinction)	D.C.
Joseph Saul Shapiro	Md.
Stephanie Esther Sills	D.C.
Lucille E. Sithens	Md.
Harry Lancaster Slye III	Md.
Thelma Ruth Smackey	Conn.
Patricia May Smith (With distinction)	Va.
Ann Marie Sneeringer (With distinction)	Pa.
George Andrew Solack	Pa.
Barbara Joan Spadetti	Va.
Sandra Lee Spivak	D.C.
Erma Jean Staful	Md.
Patricia Wilson Stanner	Va.
Carlton Francis Steep (With distinction)	D.C.
Charles Dinwiddie Stores, Jr.	Va.
Thomas Anthony Suglia	Md.
Gregory Michael Sullivan	Va.
Edward Thomas Sutherland (With distinction)	Md.
Gaile Annabelle Sykes	Va.
Joan Evans Talbert	D.C.
William Graves Talentino	D.C.
Angela Rose Tehaan (With distinction)	D.C.
Rosalyn Isabel Torchia	Va.
Maria Enriquetta Touceda	Va.
Robert Paul Tucker	Md.
Josephine Carmela Valenti	D.C.
Mildred Warford	Minn.
Barbara Stewart West	D.C.
Jerry Lee Wheeler	D.C.
Joan Marie Williams	D.C.
Warner William Wolf	D.C.
Irene Ruth Wolfe (With distincton)	D.C.
David Deh Wei Wu	D.C.
Antoinette Sun Chin Yim	Hawaii
Mary Catherine Young	D.C.
Valentine Zabijaka	N.Y.
Carl Eugene Zaleski	Pa.
David Eric Zwerner	Va.

COLUMBIAN COLLEGE

BACHELOR OF ARTS

OCTOBER 19, 1957

Vilas Fox Adams	Colo.
Blanche Arvetta Anderson	D.C.
Dimitrios Archie Argyropoulos	Greece
Henry Junior Benit	La.
Bert Bram	D.C.
Dorothy Zelia Brewer	N.M.
Iris Cohen	Md.
John Hamilton Connaughton, Jr.	Kans.
Barbara Ann Curley	Va.
Thomas Carter Dietrick	Va.
Eleanor Therese Fay	Pa.
Shirley DeLyne Forssell	N.Y.
Robert Louis Hardesty	D.C.
Dorothy Elizabeth Harris	Fla.
Suzanne Berry Hull	Calif.
Walter Neil Letson	Ala.
Susan Levy	D.C.
Nancy Genevieve Pearson Lloyd	D.C.

Stanley Mayer	Colo.
Lona Bernstein Newman	Va.
Anthony Lothrop Query	Mass.
Gene Edward Rainey	Tex.
Loretta Mae Reeves	Md.
Nancy FitzGerald Ruffner	Va.
Bernard Beryl Scheps	N.Y.
George Albert Schnack	Va.
Michael Serber	D.C.
Ernest Rodney Shifflet	Md.
Patricia Ann Simmons	D.C.
Susan Deborah Smith	Calif.
Myron Maffin Starr	Va.
Janet Ruth Swearingen	Mich.
Conrad Gravier Tuohey	Va.
Louis Clayton Willis	Conn.
William Brooks Wise	Md.

FEBRUARY 22, 1958

Lawrence Larsen Ames	Va.
Robert William Bell	Va.
Helen Constance Bonbrest	Md.
Isabel Scott Bowen	D.C.
William Burton Brener	Pa.
James Ambrois Burnett	Md.
Robert Wendell Cantrell	Mo.
Jane Marie Case	S.D.
Morris Herbert Casper	D.C.
Donald Overton Castell	Md.
(With distinction)	
Norman Sonny Cohen	D.C.
Marlene Cocker Cotton	Fla.
Ruth Hubbard Cousins	Va.
Robert Martin de Lorenzi	N.J.
(With distinction)	
Susan Carmita de Silva	Md.
Paul Grosvenor Douglas	D.C.
(With distinction)	
Mary Miles Dupuis	Va.
(Special honors in English)	
Richard Arthur Gay	Md.
Eileen Frances Glass	Va.
Helen Louise Goldberg	Md.
Julius Morton Goodman	Md.
(With distinction)	
Alexander Moore Hamilton, Jr.	Oreg.
Carolyn Myrick Hardin	D.C.
Roger Wayne Hart	Fla.
William Preston Haynes	D.C.
William Randolph Hix	D.C.
Robert Cameron Huston, Jr.	Va.
Betty Jane Johnson	D.C.
Karol Kukuca	Va.
Joseph John Lesevicius	Conn.
Amanda Atwood Lindberg	Conn.
Merton Harvey Lynn	D.C.
Mary Ellen Mackey	Va.
Theodore Robert McCann	D.C.
David Richard Millar	Md.
(Special honors in History)	
Walter Albert Morgan	D.C.
Xenophon Morris	Va.
Robert Lawrence Murphy	W.Va.
Joel Warren Novak	Va.
Carol Elizabeth Nye	Va.
Robert Fisher Olson	D.C.
Cornelia Audrey O'Reilly	D.C.
Rosanne Pear	Md.
Esther Elizabeth Peimann	S.D.
Beatriz Felpeto Petrillo	D.C.
Wanda Lou Raymond	D.C.
Miriam Frances Rothberg	D.C.
Ann Houston Ruppel	D.C.
Patricia Ellan Sanchez	Va.
Robert Morton Sandler	D.C.
Irene Melitta Schuler	Va.
Seth Thomas Shaw, Jr.	Va.
William Charles Silberman	Md.
Gertrude Brothers Stevenson	N.C.
Elizabeth Laura Stirling	D.C.
Loretta Anna Tonelli	D.C.
Ruth Hardie Wadlington	La.
Deborah Smith Weintraub	D.C.
Marilyn Hiltabidle Williams	Pa.
Walter Scott Wingo	D.C.
Lenore Gordon Woods	Va.
William Mitchell Young	N.Y.
Bertram Zumoff	D.C.

JUNE 4, 1958

Mohammed Akbarian	D.C.
Richard Galyon Ames	Va.
Jean Rice Anderson	D.C.
Samuel Wentworth Anderson	Tenn.
(With distinction)	
Lucy Denise Antoniou	D.C.
Arsen Aylaian	D.C.
Margaret Jean Barnes	Va.
Donald Michael Barrick	Md.
Marcia Collette Bartko	Md.
Sofrona Fielding Baylies	D.C.
Stuart Curry Belfield, Jr.	D.C.
Philip Kenneth Berger	Fla.
Judith Arlene Blickstein	Va.
Claude Edward Bonbrest	D.C.
Agnes Joan Botek	Pa.
Violet Ella Bowen	W.Va.
Rebecca Steuart Bowling	Md.
Donald deForest Boyer	Md.
Charles Lewis Breese	N.Y.
Barbara Sue Brisker	D.C.
Constance Joan Campbell	Va.
Donald Allen Campbell, Sr.	Va.
Mary Alice Case	D.C.
Phyllis Ann Charnley	Va.
Edna Joyce Clark	Md.
Joan Lois Cohen	D.C.
John James Collins, Jr.	N.J.
Olive Dalton	Miss.
Miriam Hapgood DeWitt	D.C.
(Special honors in Journalism)	
Lloyd Richard Dille	Iowa
Linda Lou Doane	D.C.
Katherine Genevieve Dolfis	D.C.
Robert Edward Dolson	N.Y.
Marilyn Patricia Edelin	D.C.
Stanley Ehrlich	D.C.
Scott Magruder Eldridge	Va.
Mary Louise Engel	D.C.
(With distinction)	
Patricia Joanne Evans	Calif.
Semi Feuer	D.C.
Barbara Slatry Finney	Va.
Richard Arthur Firda	D.C.
(With distinction—Special honors in German)	
James Frederick Fishback	Md.
Mary Katherine Foreshew	Va.
Paul Marvin Garner	D.C.
Frances Wolf Gendelman	D.C.
Elizabeth Leland Gignilliat	Ga.
Charles Kirkwood Gillies	Ill.
Joy Rochelle Gold	Md.
Arlene Sehlein Golub	Md.
James Arvel Goodnight	Va.
Bernard Arthur Goodrich	Va.
Scottie Lee Graham	Okla.
Roosevelt Browne Greene	D.C.
Gary Glen Griffeth	Ill.
Ellen Griffin	Md.
Richard M. Guttmacher	Md.
Judith Barbara Guttmann	D.C.

Violet Lowry Haley LL.B. 1933, National University	Va.
Nell Hancock	Tenn.
Sally Hardison (With distinction—Special honors in Spanish)	Va.
Hubert Arthur Hardy	Mass.
Arthur Hall Harris	Conn.
John William Henderson, Jr.	Va.
Carole Theresa Hesse	D.C.
Mary Elizabeth Hoffman (With distinction—Special honors in Art)	D.C.
William Francis Hogan	Va.
Bernice Carol Hollett	Fla.
Ethel Tucker Huffman	Md.
Jean Putnam Jacocks	Md.
Richard Julius Jamborsky	Tenn.
Joyce Harvey Jennings	Ill.
Michael Gedaliah Kammen (With distinction)	D.C.
Doramay Keasbey	Calif.
Joseph Edward Keilin	D.C.
Tempie Christine Kern	Va.
Chong Rok Kim	D.C.
Maiko Kobiashuili	Va.
David Anthony Koons	D.C.
John Thomas Kopeck	Md.
Ellen Elizabeth Kraus	D.C.
Arlene Sheila Krochmal	Md.
Morton Langstaff	Va.
Ronald Gordon Latimer	Md.
Mildred Jane Layton	Va.
Kathleen Rose Lennon	Md.
John Gerald Leyden (With distinction)	Va.
Sheldon Murray Litt	D.C.
John Carl Lowe	D.C.
Mary Alice MacDonald	Texas
Ronald Alexander MacMillan, Jr.	D.C.
Charles Howard Marshall	Ohio
Julius Corpening Martin III	D.C.
Alan Davidson Mason	N.Y.
Olivia Benedict Maynard	Va.
Johnnie Edward McLane	Va.
Dorothy Mary Messner	Calif.
Barton Paul Meyers (With distinction)	D.C.
Allan Barnett Minster	D.C.
Rebecca White Mitchell	Va.
Allen Mendel Mondzac	Md.
Caroline Morton Morgan	Va.
Kittie Anne Murray	Wis.
Patricia Ann Neighbarger	Ohio
Patricia Theisz O'Connor	D.C.
John Maurice O'Sullivan	D.C.
Lawrence Justis Pace, Jr.	Va.
Edith Lamke Pentecost	Va.
Jane Frances Perham	Ga.
David Mermod Perkins	D.C.
Johanna Maria Peters	D.C.
Anne Taylor Phelan	Md.
Sigmund Richard Pincus (With distinction)	D.C.
Ilga Maria Plavnicks	D.C.
Paul Ira Raines	D.C.
Fernando Ramirez-Tió	Puerto Rico
Marilyn Heloise Rankin	Va.
S. Jesse Reuben	N.Y.
Margaret Busick Richards With distinction—Special honors in Journalism)	D.C.
William Robert Richards	Va.
Hugh O'Neal Richardson (With distinction)	Ga.
William Stuart Riggsby	Ky.
David Arthur Rodgers	D.C.
Virginia Roehr	D.C.
Derek Von Roemer (With distinction)	Md.
Doris May Rosenberg	D.C.
Johanna Clae Rosengarten	D.C.
Gloria Ann Rothman	Va.
William Don Russell	Ga.
Chester Page Samson	Va.
Elva Lee Schroebel	D.C.
Marcia Lewis Semones	Va.
Leon Gilbert Sheer	Md.
Samuel Paul Sirkis	D.C.
Frederic Newcome Smith	Ind.
Ruth Davidson Smith	Conn.
Albert Ormond Stadermann	D.C.
Edith Anne Stern	D.C.
Peggy Ann Stubbs	Va.
Elizabeth Brooks Stull	Pa.
Barbara Jane Suse	D.C.
James Thomas Suter	Va.
Esther Ernestine Taillon	D.C.
Marilyn Susan Talcott	D.C.
Beverly Wasserman Talpalar (With distinction)	Va.
Karen Erickson Taylor	Va.
Valery Thornton	D.C.
Veril Howard Tielkemeier	Va.
Paul Joseph Truntich	Pa.
Samuel Delmar Wallace, Jr.	Fla.
Yasuko Watanabe	Japan
James Louis Wessel	Calif.
William Woodford Willis	Va.
Carol Wilma Wilson	D.C.
Allen Robert Wolfe	D.C.
Beverly Wolin	D.C.
William Joseph Wright, Jr.	Md.
Patricia Miller Young	Va.

BACHELOR OF SCIENCE

OCTOBER 19, 1957

William Spencer Meade	D.C.

FEBRUARY 22, 1958

David Clark Burdge	D.C.
Charles Robert Detwiler	Va.
Ruth Doris Koidan A.B. 1954, The George Washington University	D.C.
Louisa Elizabeth Pitkin	D.C.
Maxine Lieberman Rockoff (With distinction)	Va.

JUNE 4, 1958

Robert Raoul Banville Va.
Samuel Heffner Brown Md.
Howard Melvin Cohen D.C.
Martin Irwin Cohen D.C.
George Frederick Creswell D.C.
Richard Harris Eney Va.
Park William Espenshade, Jr. Md.
(With distinction)
Gloria Mae Hammack D.C.
Bernard Alvin Heckman D.C.
David Hiner Hertig Va.
Mary Hyunsook Kim Korea
Irena Aldona Krivickas D.C.
Gerald Saul Landau Md.
Ruth Savoy Lattimore D.C.
Gerald Libman D.C.
Priscilla Bunker Maury Md.
Harry Daily McCamet, Jr. Va.
Robert Hugh Moore Va.
Marie Chitwood Negrón Md.
Paul Edgard Rudolph Nordquist, Jr. Va.
(With distinction—Special honors in Chemistry)
Gordon Albert Richardson Md.
Robert Edmund Robinson III D.C.
Stanley Ivan Rubler N.Y.
T. James Segnari D.C.
Harris David Shifrin D.C.
Roger Earl Spitzer D.C.
(With distinction)
Linda Beck Szojchet D.C.
Thomas Russell Whyte D.C.
Anna Margaret Zamoyska Md.
(Special honors in Chemistry)
Edward J. Zapolski N.Y.

MASTER OF ARTS

OCTOBER 19, 1957

Maj-Britt Sundberg De Saussure Calif.
A.B. 1948, University of California at Los Angeles
Fred Frishman N.Y.
B.B.A. 1947, College of the City of New York
A.B. 1956, The George Washington University
Joseph Edward Gutierrez Wis.
A.B. 1956, Georgetown University
James Bailey Henkin Md.
A.B. 1956, The George Washington University
Charles Edwin Hesaltine, Jr. Pa.
A.B. 1954, The George Washington University
Gerald James Karaska Pa.
B.S. 1954, Pennsylvania State University
Mary Anne LaCovis D.C.
A.B. 1952, The George Washington University
Norman Randolph Mason, Jr. Va.
A.B. 1955, The George Washington University
Norman Lowell Merkler Md.
A.B. 1956, The George Washington University
Claudene Tobin Seidel N.Y.
A.B. 1953, Vassar College
Kenneth Nordly Skoug, Jr. Minn.
A.B. 1953, Columbia University

FEBRUARY 22, 1958

Bernell Elwyn Baldwin Md.
A.B. 1956, Washington Missionary College
Elmer Price Costello Pa.
A.B. 1949, Marshall College
Lola Tidwell Dees Ala.
A.B. 1950, The George Washington University
Philip Meynard Flammer Utah
B.S. 1953, Utah State Agricultural College
Muriel Clarke Seelye D.C.
A.B. 1947, Bennington College
Raymond Law Spencer Va.
A.B. 1953, The George Washington University
Robert Wheeler Tucker Va.
Ph.B. 1931, University of Chicago

JUNE 4, 1958

Robert Eugene Boley Va.
A.B. 1953, The George Washington University
Seymour Walter Chad Md.
A.B. 1948, University of California at Los Angeles
Helen Jeanne Christrup Va.
A.B. 1949, University of Missouri
B.S. 1951, Washington University
Lawrence Jon Clipper Va.
A.B. 1953, Brown University
Frances Rowena Cook D.C.
A.B. 1952, The George Washington University
John Tait Davis Canada
A.B. 1955, University of Toronto
David Bruce Dickens Md.
A.B. 1955, University of Buffalo

Viviane di Gioja Durell Conn.
B.S. in F.S. 1953, Georgetown University

James Irven Eden Ohio
A.B. 1949, College of Wooster

Paul August Edwards Minn.
A.B. 1943, Wheaton College
B.D. 1949, Bethel Seminary

Judith Foelak Geller Va.
A.B. 1954, The George Washington University

Lewis Perry Hartman Va.
A.B. 1954, Goshen College

Ching-Yao Hsieh China
A.B. 1939, St. John's University, China

John Warren Lewis D.C.
A.B. 1948, The George Washington University

James David O'Neal Md.
A.B. 1953, The George Washington University

Ralph Leon Rosnow Md.
B.S. 1957, University of Maryland

William Sokolowsky N.Y.
A.B. 1952, The George Washington University

Marie Harte Stafford D.C.
A.B. 1942, Georgian Court College

Neil Edward Strawser Md.
A.B. 1951, Oberlin College

Bob Lee Sturm Okla.
A.B. 1956, The George Washington University

Loretta Burnette Sullivan Va.
A.B. 1953, Mary Washington College

Jon Edward Updike D.C.
A.B. 1957, The George Washington University

Richard Myers Warfield Md.
A.B. 1948, The George Washington University

Paul Weisberg N.Y.
B.B.A. 1956, College of the City of New York

Joan Margaret Whittemore Mass.
A.B. 1955, University of Massachusetts

Audrey Doris Winger Wis.
A.B. 1943, University of Wisconsin

MASTER OF SCIENCE

OCTOBER 19, 1957

Thomas Goodwin Alexander Va.
B.S. 1950, University of Maryland

Earl Franklin Becker, Jr. Md.
B.S. 1951, Muhlenberg College

Charles Devin, Jr. Md.
B.S. 1953, The George Washington University

Herbert Samuel Gross Md.
B.S. in Phar. 1954, The George Washington University

Norman Saburo Ikari D.C.
A.B. 1949, University of California at Los Angeles

Domenic Anthony Maio D.C.
B.S. 1956, Georgetown University

Leroy Lawrence Merring Wyo.
A.B. 1956, Catholic University of America

George Bernard Pelleu, Jr. Md.
B.S. 1951, University of Maryland

Henry Douglas Spong N.C.
A.B. 1949, Emory University

Richard Clarence Trimble Va.
A.B. 1950, Kansas State Teachers College, Emporia

FEBRUARY 22, 1958

Leticia Tabuena Angeles Philippines
B.S. in Phar. 1953, University of the Philippines

Jimmy Ross Evans D.C.
B.S. 1947, Bishop College

Haikaz Martiros Grigorian Va.
A.B. 1952, Boston University
M.S. in P.H. 1953, Columbia University

Julian Norman Kanfer Md.
B.S. 1954, Brooklyn College

Marlene Reuter McGann S.D.
B.S. 1950, Augustana College

Robert Sanford Rozman Md.
B.S. 1955, The George Washington University

Earl Carlyle Suitor, Jr. Md.
B.S. 1952, University of Massachusetts

Choong Hum Woo D.C.
A.B. 1955, North Central College

Joseph Francis Worley D.C.
B.S. 1955, The George Washington University

Ernest Frederick Zimmerman D.C.
B.S. in Phar. 1956, The George Washington University

JUNE 4, 1958

Lilia Javier Angeles Philippines
M.D. 1941, University of the Philippines

Jane Royston Blake Va.
B.S. 1953, Roanoke College

Lawrence Vaughan Bowly, Jr. Md.
B.S. 1950, American University

Robert Joseph Byrne Md.
D.V.M. 1944, Cornell University

Margaret Matchett Coahran Pa.
B.S. 1954, Earlham College

Vincent Wentworth Hollis, Jr. N.Y.
A.B. 1954, New York University

Howard Marvin Katzen Md.
B.S. 1956, Johns Hopkins University

Marie Josephine Kendall Canada
A.B. 1945, University of British Columbia

Charles Ronald Seeger Ohio
B.S. 1953, Ohio State University
Stanley Irwin Sherr D.C.
B.S. 1957, The George Washington University

Wesley Dean Skidmore D.C.
B.S. 1953, University of Utah
James Blake Thomas Va.
A.B. 1952, Wabash College

THE SCHOOL OF MEDICINE

Doctor of Medicine

June 4, 1958

Bernard Leon Albert N.J.
(With distinction)
B.S. 1954, Franklin and Marshall College
Olav Henry Alvig Va.
B.S. 1951, The George Washington University
Ronald Alan Apter D.C.
(With distinction)
William Landon Banfield III Md.
A.B. 1954, Princeton University
John William Barrett Pa.
John Norman Bartone Ohio
B.S. 1954, Western Reserve University
Jerald James Bergera Utah
Donald Richard Boelke Wis.
A.B. 1954, Carleton College
Robert Singleton Bryant D.C.
B.S. 1954, The George Washington University
John William Bunke Wis.
John David Campbell II Calif.
A.B. 1954, University of California at Los Angeles
Matthew John Cerny, Jr. Md.
A.B. 1954, Johns Hopkins University
Charles Ackerman Cole Calif.
B.S. 1945, Ohio State University
George Peter Contis Pa.
A.B. 1954, University of Pittsburgh
Lowell Raymond Daines Utah
B.S. 1955, Utah State University of Agriculture and Applied Science
Paul Hatch Daines Utah
B.S. 1954, Utah State University of Agriculture and Applied Science
John Ronald Day, Jr. Md.
B.S. 1955, University of Maryland
Ronald Stuart Deitch D.C.
A.B. 1954, Washington and Lee University
Paul Rich Dinsmore Maine
A.B. 1954, The University of Maine
Byron Maurice Dodge Wash.
B.S. 1954, University of Washington
Harold Wesley Draper D.C.
A.B. 1954, Taylor University
Richard Edelstein N.Y.
(With distinction)
A.B. 1952, Cornell University
Clark Allen Erickson Wis.
A.B. 1954, Ripon College
Herbert Stelwyn Gates, Jr. Va.
A.B. 1954, Duke University
Neil Wylie Goodsell Va.
A.B. 1955, The George Washington University
Stephen Ireland Granger Md.
A.B. 1952, Amherst College

Katherine Virginia Greene Va.
A.B. 1947, Eastern Nazarene College
A.M. 1948, Ph.D. 1954, The George Washington University
Claire Louise Hammel Md.
(With distinction)
George Milton Henneberger Md.
B.S. 1953, University of Maryland
Masud Homayouni Iran
B.S. 1953, Eastern Michigan College
M.S. 1954, University of Michigan
Frederick Willis Hubach N.Y.
A.B. 1954, Western Maryland College
John Iliescu, Jr. Ill.
B.S. 1952, D.D.S. 1954, University of Illinois
John Andrew Johnson, Jr. Pa.
B.S. 1954, Grove City College
John Paul Jones, Jr. Minn.
A.B. 1954, Carleton College
Richard Miles Kaufman Md.
(With distinction)
A.B. 1955, The George Washington University
Charles Howard Klaif N.Y.
A.B. 1954, Syracuse University
Thomas Henry Koeze Mich.
Werner Krebser Va.
Paul Keith Larive S.D.
A.B. 1954, B.S. 1956, University of South Dakota
Thomas Plin Leonard D.C.
Robert John Levine Va.
(With distinction)
Steven Everett Levy Va.
(With distinction)
A.B. 1955, The George Washington University
John Arthur Lind Mass.
B.S. 1954, Bates College
Joseph Wayland Linhart Va.
(With distinction)
B.S. 1954, The George Washington University
George Liss D.C.
A.B. 1955, The George Washington University
Ralph J. Litton, Jr. Idaho
B.S. 1954, University of Idaho
Joel David Marcus N.Y.
A.B. 1954, Columbia University
Tius Walter McCowin Md.
B.S. 1949, Utah State University of Agricultural and Applied Science
George Francis Miller, Jr. Va.
(With distinction)
George Hunt Mitchell, Jr. Md.
B.S. 1954, Washington and Lee University

William Raymond Mize, Jr. Ill.
A.B. 1954, Washington University
Charles Edward Mullins Md.
(With distinction)
A.B. 1954, Princeton University
Erven Jean Nelson Utah
B.S. 1954, Brigham Young University
Margaret Fealy Obear Va.
A.B. 1955, The George Washington University
Hardin Eling Olson Va.
A.B. 1955, The George Washington University
Caddie Lewis Parker D.C.
B.S. 1954, University of Utah
Ian Hallam Plenderleith Mich.
B.S. 1951, Michigan State University of Agriculture and Applied Science
Joseph Jordon Pollock Pa.
B.S. 1954, Grove City College
Marvin John Potter Calif.
A.B. 1954, Stanford University
Louis Umile Pulicicchio N.Y.
A.B. 1954, Columbia University
Raymond Julius Rademacher Mont.
A.B. 1952, Montana State University
James Edwin Rasband Calif.
(With distinction)
A.B. 1953, Brigham Young University
Erick Robert Ratzer Ill.
(With distinction)
Catherine Tissot Ray Md.
A.B. 1954, Swarthmore College
Robert Hammond Reed Colo.
B.S. 1954, The George Washington University
Robert Leonard Reis N.J.
(With distinction)
John Howard Renner Ind.
A.B. 1954, Dartmouth College
David Nelson Robb Calif.
Ph.B. 1948, University of Chicago
Manuel W. Roman N.Y.
A.B. 1954, New York University
Ivan Charles Schatten Pa.
B.S. 1950, University of Pittsburgh
Robert Habeeb Skaff Va.
A.B. 1955, West Virginia University
Darrell Roger Slette Wis.
B.S. 1954, University of Wisconsin
David Forsythe Smith Calif.
George Francis Snell Conn.
(With distinction)
Richard Donald Stansberry Okla.
A.B. 1950, Oklahoma City University
Jere Bart Stern D.C.
B.S. 1954, The George Washington University
Robert Claude Sullivan Md.
A.B. 1954, Williams College
Wendell Reginald Sylvester Md.
A.B. 1951, Columbia University
Thomas Tze-Tung Tang D.C.
A.B. 1944, National Central University, China
B.S. 1949, St. Mary's College
M.S. 1951, Ph.D. 1954, The George Washington University
Bahman Teimourian Va.
B.S. 1954, Bethany College
Fred Brownell Tomlinson Ga.
A.B. 1955, The George Washington University
Robert Vaughn Tompson Mo.
William Julian Towles Calif.
A.B. 1954, Occidental College
Charles Hilary Troshinsky D.C.
(With distinction)
A.B. 1954, The George Washington University
George Scott Tyler Calif.
A.B. 1954, University of California at Los Angeles
Morton Bertram Waldman N.J.
A.B. 1954, Lafayette College
Chung Chiang Wang N.Y.
B.S. 1952, Iowa State College
Harry Edward Wilson, Jr. Pa.
B.S. 1954, Grove City College
Theodore Charles Woy Calif.
Jason Faht-Gong Yee Calif.

THE LAW SCHOOL

Bachelor of Laws

October 19, 1957

William Gerson Applestein D.C.
A.B. in Govt. 1955, The George Washington University
Charles David Atchisson Mo.
A.B. 1950, University of Missouri
Allin Preston Baxter D.C.
A.B. 1952, University of Virginia
David Emerson Bean Utah
B.S. 1954, University of Utah
Charles Earhart Bouton Md.
B.S. 1952, University of Maryland
Charles Moulton Brewer Md.
A.B. 1953, University of Maryland
Albert LeRoy Carter Ill.
B.S. 1951, Purdue University
Christ Christ N.C.
A.B. 1948, A.M. 1953, Middlebury College
Thomas Raymond Cotter Va.
A.B. 1951, St. Bonaventure University
Lohr Mitchell Dick Va.
A.B. 1947, Princeton University
John William Flood Faircloth Md.
A.B. 1955, Harvard University
William Paul Gormley Calif.
A.B. 1949, San Jose State College
A.M. 1951, University of Southern California
Ph.D. 1952, University of Denver

Peter Paul Hanagan B.S.S. 1954, Georgetown University	N.M.
John Benjamin Howerton A.B. 1949, Richmond College A.M. 1956, University of Richmond	Va.
Richard John Jacobson A.B. 1953, St. Anselm's College	N.H.
Peter James B.S. 1954, University of Pennsylvania	Tenn.
Michael Thomas Kitsoulis A.B. in Govt. 1953, The George Washington University	D.C.
Nelson Littell, Jr. B.S. 1941, Pennsylvania State University	N.Y.
Jeffrey Neal Martin A.B. 1950, University of Maine	Maine
William McKamey B.S. 1953, East Tennessee State College	Tenn.
Leonidas Ralph Mecham B.S. 1951, University of Utah	Utah
William Charles Miller A.B. 1953, University of Maryland	Md.
John Charles Morris B.M.E. 1952, North Carolina State College	N.C.
Peter James Neimo B.S. 1922, U.S. Naval Academy M.S. 1930, Harvard University	Va.
Daniel Emmet Nelson B.S. 1953, University of Utah	Utah
Leonard Bradwell Phillips A.B. 1951, Yale University	Iowa
James Miller Russell A.B. in Govt. 1949, The George Washington University	D.C.
Jere William Sears A.B. 1950, Harvard University	Idaho
Edgar Sims, Jr. B.S. 1951, East Tennessee State College	Va.
Bernard Malan Tanner B.S. 1954, University of Utah	Utah
William Livingston Travis B.S. 1933, U.S. Military Academy	Ga.
Theodore Robert Verkouteren B.S. 1951, University of Maryland	Md.
Robert Oswald Webster B.M.E. 1947, Ohio State University	Kans.
Clyde Franklin Willian B.S. 1952, Rose Polytechnic Institute	Ill.
Earl Scott Wolfley B.S. 1952, Brigham Young University	Wyo.
Charles Bryant Wood B.S. 1951, American University	Va.
Donald Edward Zinn B.S. in M.E. 1954, Pennsylvania State University	Pa.

February 22, 1958

Waldon Lee Baker	Va.
Sara Elizabeth Bisselle A.B. 1933, Radcliffe College	D.C.
Francis Bitton B.S. 1953, Ricks College	Idaho
David Buckbinder A.B. 1952, University of Iowa	R.I.
Donald William Canady B.S. in Met. Eng. 1951, University of Missouri	Va.
Robert Wilson Coll A.B. 1952, The George Washington University	D.C.
Grover Collins Cooper A.B. 1952, Ohio Wesleyan University	Va.
Alexander Corey A.B. 1928, Harvard University	N.Y.
John Pinna Craven B.S. in C.E. 1946, Cornell University M.S. in C.E. 1947, California Institute of Technology Ph.D. 1951, University of Iowa	Md.
Stanley Cykowski A.B. 1946, University of Massachusetts	Va.
Lloyd Eckert Dietrich A.B. 1952, Pennsylvania State University	Va.
Jaroslav A. Drabek A.B. 1953, Washington and Lee University	D.C.
Thomas Francis Engelhardt A.B. 1950, University of Wisconsin	Va.
Irving Melvin Freedman B.S. in E.E. 1954, Northeastern University	Va.
Robert William Gambino A.B. 1951, University of Virginia	Va.
Irving Gendelman B.S. in M.E. 1950, University of Buffalo	N.Y.
Charles Helman Gray A.B. 1943, M.D. 1947, Stanford University	Calif.
Harlan Young Hammond A.B. 1949, University of Utah	Utah
Yoshima Hayashi A.B. 1950, University of Hawaii	Hawaii
Murdock Head D.D.S. 1947, University of Louisville M.D. 1953, University of Vermont	Va.
Herbert Hoover Henderson B.S. in B.A. 1953, West Virginia State College	W.Va.
Clifton Tabor Hilderley, Jr. B.S. in C.E. 1952, Michigan College of Mining and Technology	Va.
John Root Hopkins, Jr. B.S. in E.E. 1952, Virginia Military Institute	D.C.
Stanley Robert Jacobs A.B. 1953, University of Maryland	Md.
Robert Paul Kalish A.B. 1955, The George Washington University	D.C.
Richard Gruver Kline A.B. 1953, Harvard University	Md.
Mary Gamble Kump A.B. 1936, West Virginia University A.M. 1952, The George Washington University	W.Va.
John Casper Leary B.S. 1955, Augustana College	Va.
Albert Abraham Mahassel B.S. 1952, Worcester Polytechnic Institute	D.C.

William Everett Manson N.H.
A.B. 1952, University of New Hampshire
Grant Elmer Mayberry D.C.
A.B. 1954, The George Washington University
Ronald Fisher McDonald, Jr. Md.
A.B. 1955, University of Maryland
Edward Douglas Means, Jr. D.C.
A.B. 1953, Duke University
John Rowe Milliken N.C.
A.B. 1952, University of North Carolina
William Waldrop Monday Va.
B.S. in M.E. 1956, Illinois Institute of Technology
John Zabriskie Noyes D.C.
A.B. 1952, University of Washington
Edward Anthony Palamara Md.
A.B. 1951, University of Maryland
Alejandro Palau Md.
B.S. 1955, University of Maryland
Mary Ax Palladino Pa.
A.B. 1930, Lebanon Valley College
A.M. 1933, Pennsylvania State University
George John Pantos Mass.
A.B. 1952, Syracuse University
Donald Garfield Procter Va.
B.S. 1953, University of Florida
Ralph Reisner Wash.
A.B. 1952, University of Washington
Rudolph Valentin Rolinec Md.
B.S. in E.E. 1949, University of Pittsburgh
Seymour Rothstein Ohio
B.S. in M.E 1952, Case Institute of Technology
Charles Edward Sandeen Va.
A.B. 1953, The George Washington University
Howell Jay Saul N.Y.
A.B. 1953, The George Washington University
John Louis Sigalos Va.
B.S. 1949, Cornell University
Dale Richard Small Mich.
B.Arch. 1951, University of Michigan
M.S. in Eng. 1954, Massachusetts Institute of Technology
Charles Silverton Solomon Alaska
A.B. 1952, New Mexico Highlands University
William Frederick Sommer, Jr. Va.
B.S. in M.E. 1950, Purdue University
Claron Chipman Spencer Utah
A.B. 1954, The Geogre Washington University
Joel Stearman Md.
A.B. 1950, New York University
Harvey Bert Steinberg Md.
A.B. 1955, The George Washington University
Mary Peal Stevens N.Y.
B.S. 1939, Hampton Institute
Frank Tokio Takao Hawaii
A.B. 1950, University of Hawaii
James Franklin Walker N.C.
B.S. 1949, Hampton Institute
Carl Gwynne Ward W.Va.
A.B. in B.A. 1954, West Virginia University
Howard Hampton Woodworth Md.
B.S. 1942, University of Minnesota
Robert Frederick Ziems Mich.
B.S. in C.E. 1951, Michigan College of Mining and Technology

JUNE 4, 1958

Richard Comfort Allen Va.
A.B. 1951, Knox College
Paul James Ausbeck Va.
B.S. in Met.Eng. 1952, Purdue University
Raymond Nicholas Baker Pa.
B.S. in E.E. 1946, U.S. Naval Academy
Thomas William Barham Va.
B.S. 1953, Virginia Polytechnic Institute
Edith Carter Baum Md.
A.B. 1955, Western Maryland College
Russell Evans Bond, Jr. Md.
A.B. 1951, Washington Missionary College
Harvey Clifton Bridgers, Jr. Pa.
A.B. 1953, Grove City College
Ainsworth Howard Brown Md.
A.B. 1955, Gettysburg College
Joseph Alton Caldwell S.C.
B.S. 1949, University of South Carolina
Philip Carin N.Y.
B.B.A. 1950, College of the City of New York
John Leslie Carmichael, Jr. Ala.
A.B. 1951, Vanderbilt University
A.M. 1956, Columbia University
Edgar Donald Coffman Va.
A.B. 1953, Western Maryland College
Joan Webster Connor D.C.
A.B. 1955, Kent State University
Edward Alfred Conroy, Jr. D.C.
B.S. 1942, Queens College
M.S. 1943, Ph.D. 1946, Pennsylvania State University
Neal John Conway Md.
B.S.S. 1953, Georgetown University
Clarence William Crady, Jr. Va.
B.S. in P.E. 1949, University of Pittsburgh
Morris Michael Cramer Pa.
A.B. 1955, Pennsylvania State University
Matthew Joseph Cullen, Jr. N.H.
A.B. 1946, Harvard University
Daniel McClinton Curts Mich.
A.B. 1955, University of Michigan
Mitchell Stein Cutler Md.
(With distinction)
B.S. in B.A. 1955, Georgetown University
Daniel D'Antimo N.Y.
B.S. 1948, University of Buffalo
Marion Faith Diegelmann Md.
A.B. 1955, The George Washington University
Harold Anthony Dixon N.Y.
B.E.E. 1954, New York University

Roy Herman Duesterdick Va.
B.S. 1951, Rutgers University
Jack Warren Edwards Oreg.
B.S. in C.E. 1950, Oregon State College
John Burnison Evans Va.
A.B. 1953, University of Virginia
Franklin Milton Everett D.C.
B.S. 1950, The Geogre Washington University
Salvatore Louis Farino Pa.
A.B. 1953, Duquesne University
Richmond Heath Ferguson III Pa.
A.B. 1953, St. Vincent College
Robert George Flick Va.
A.B. 1954, Pennsylvania State University
William George Foster, Jr. N.J.
B.S. 1948, Drexel Institute of Technology
Katharine Swann Fowler D.C.
A.B. in Ed. 1933, The George Washington University
M.Mus. 1938, Catholic University of America
Clyde Douglas Frame Md.
A.B. 1950, Washington Missionary College
Peter Glickert D.C.
B.S. in Ed. 1949, Fordham University
Marvin Arthur Goldenberg Md.
A.B. 1951, B.S. in E.E. 1952, Pennsylvania State University
Seichi Hirai Hawaii
A.B. 1950, University of Hawaii
Richard Kelly Hocker Ariz.
A.B. 1955, University of Arizona
Donald Lee Hutson Mo.
A.B. 1953, Central College
Rowland Hyde Va.
B.S. 1951, University of Maryland
William Thomas Ivey, Jr. D.C.
A.B. 1950, University of South Carolina
Stephen Lester Jennings Md.
A.B. 1955, Clark University
Danforth Joslyn Va.
A.B. 1953, The George Washington University
Andrew Richard Juhasz Md.
B.S. in M.E. 1949, University of Buffalo
Darrell Dee Kast W.Va.
A.B. 1954, West Virginia University
Werner Widtsoe Kiepe Va.
B.S. 1955, University of Utah
Sherman Leland, Jr. Calif.
A.B. 1952, University of California
Laurence Levitan D.C.
B.S. in Com. 1955, Washington and Lee University
Lee Gilson Lovett Md.
A.B. 1955, Principia College
Elizabeth Joyce MacManus Va.
A.B. 1948, Hollins College
Harry Francis Malzeke II Va.
B.S. 1954, Washington and Lee University
Albert Matteucci Nev.
A.B. 1952, University of Nevada
Thomas Edward Medeiros Va.
B.B.A. 1955, University of Miami
Irwin William Millen Va.
B.S. in C.E. 1950, Massachusetts Institute of Technology
Robert John Moliski Va.
B.S. in B.A. 1950, Syracuse University
James Philip Morris Md.
A.B. in Govt. 1950, The George Washington University
Theodore Albert Munter D.C.
A.B. 1954, Bucknell University
George Robert Olexo Conn.
A.B. 1950, University of Bridgeport
A.M. 1955, New York University
Hugh Thomas O'Reilly D.C.
B.S.S. 1954, Georgetown University
Joseph Panzitta N.J.
A.B. 1955, The George Washington University
John Nicholas Papaioanu Va.
A.B. 1955, University of Delaware
Edward Andrew Petko Va.
B.S. in E.E. 1950, University of Illinois
Edgar Eugene Plummer Calif.
A.B. 1955, Westmont College
John Theodore Powell Va.
A.B. 1930, University of Washington
Richard Manford Rabkin Va.
B.E.E. 1950, Cornell University
Richard John Ragan Ohio
A.B. 1951, Ohio University
Darrell George Renstrom Utah
B.S. 1955, University of Utah
Kenneth Norman Rogers N.Y.
B.S. 1953, Ohio State University
Frank Joseph Sala, Jr. Nev.
B.S. in B.A. 1952, University of Nevada
Margaret Belnick Schulman D.C.
A.B. 1938, The George Washington University
John Howard Sheble III Va.
A.B. 1942, Williams College
Robert Francis Silver Mont.
A.B. 1953, University of Virginia
William Anthony Teoli, Jr. N.Y.
B.S. 1953, M.S. 1957, University of Notre Dame
Richard Gordon Troop Va.
B.S. 1952, University of New Hampshire
George William Vakos Va.
A.B. 1953, College of William and Mary
William T. Watkins Fla.
A.B. 1950, The George Washington University
Robert Carlye Watson Va.
A.B. 1953, The George Washington University
Lynn Marion Watwood, Jr. Va.
A.B. 1955, The George Washington University
Clifford Lawrence Wiser Md.
B.S. 1952, University of Maryland

BACHELOR OF LAWS IN NATIONAL UNIVERSITY

FEBRUARY 22, 1958

Edward Kilroe Burns Md.
A.B. 1942, University of Notre Dame
Phillip Henry Jones Va.

JUNE 4, 1958

Edward Stanley Kidd, Jr.	Va.

JURIS DOCTOR

OCTOBER 19, 1957

Walter Charles Bernkoff B.S. in E.E. 1949, University of Denver	Va.
Carl Ray Burns A.B. 1948, Simpson College A.M. 1949, State University of Iowa	Iowa
Melvin Cohen B.S. in Ch.E. 1948, Virginia Polytechnic Institute	Va.
James Hoagland French, Jr. A.B. 1952, West Virginia University	W.Va.
Donald Joseph Hayes B.E.E. 1953, Cornell University	Conn.
Paul Edmund McNulty A.B. 1952, The George Washington University	Va.
Suzanne Virginia Richards (With distinction) A.B. 1948, The George Washington University	D.C.
Frieda Sucher Shapiro A.B. 1942, Brooklyn College	Md.
Harold Warren Strand A.B. 1949, St. Olaf College A.M. 1950, University of Wisconsin	Minn.
Paul Grier Wilson, Jr. A.B. 1950, University of Maryland	Fla.

FEBRUARY 22, 1958

Christopher Stephen Changaris B.S. 1945, U. S. Coast Guard Academy	Fla.
Harvey Gobetz A.B. 1955, Harpur College	N.Y.
Upton Keller Guthery A.B. 1952, The George Washington University	D.C.
Douglas Allen Kahn A.B. 1955, University of North Carolina	N.C.
Paul Charles Krizov B.S. in Ch.E. 1948, University of Texas	Texas
Harold Levine B.S. in C.E. 1954, Purdue University	Va.
Eugene Mayer Malkin A.B. 1952, University of Maryland	D.C.
Charles Edgar Martin B.S. 1951, U. S. Coast Guard Academy	Nebr.
Earle Westgate Putnam A.B. 1950, Dartmouth College	Va.
Howard Stowe Roberts B.S. in M.E. 1935, Purdue University	Fla.
Karl Irvin Salzberg B.S. 1952, Cornell University	Va.
Charles Wayne Thompson A.B. 1955, College of Emporia	Kans.
Robert Oscar Wells, Jr. A.B. 1952, The George Washington University	D.C.
John Leslie White A.B. 1948, M.S. 1949, Kalamazoo College	Mich.
John Jesse Yurow A.B. 1953, The George Washington University	Md.

JUNE 4, 1958

Kenneth George Anderson A.B. 1953, University of North Carolina	N.C.
Gene Arlan Bechtel B.S. 1954, McPherson College	Kans.
Paul Harold Blaustein B.S. 1953, Columbia University	N.Y.
Donald Deane Bosben B.S. in C.E. 1950, University of Wisconsin	Va.
Arthur Livingston Branning B.E.E. 1952, Georgia Institute of Technology	Va.
William James Critchlow III A.B. 1955, The George Washington University	Utah
Karl Ernst Davis A.B. 1955, Hampden-Sydney College	Md.
John Philip Dellitt B.S. in E.E. 1950, Iowa State College of Agriculture and Mechanic Arts	Va.
Alfred Charles Dybeck A.B. 1955, The George Washington University	Va.
Jerald Noel Engstrom B.S. 1955, University of Utah	Utah
William Lars Ericson B.S. in I.M.E. 1951, University of Michigan	Md.
Eugene George Goslee A.B. 1949, American International College	Minn.
Louis Thomas Guthrie A.B. 1951, M.S. 1952, Pennsylvania State University	Pa.
Frederick Bingham Howden III A.B. 1955, University of New Mexico	N.M.
William Raines Judy B.S. in B.A. 1953, Fairmont State College	W.Va.
Joseph Winston Kennedy B.S. 1954, McPherson College	Iowa
David Hoy Chun Lee A.B. 1953, University of Hawaii	Hawaii
David Mechanic A.B. 1954, University of Vermont	Va.
John Henry Mion B.S. in E.E. 1952, Rutgers University	Va.

Millard Frederick Ottman, Jr. Va.
A.B. 1956, Johns Hopkins University
Stanford Elmer Parris Va.
B.S. 1950, University of Illinois
Noel Irving Smith Va.
B.S. 1952, Iowa State College of Agriculture and Mechanic Arts

James Daniel Stokes, Jr. Va.
B.S. in E.E. 1953, Tulane University
Gordan Siddoway Thatcher Idaho
B.S. 1955, Ricks College
George Frank Wilsey, Jr. Fla.
B.S. 1953, Florida State University

MASTER OF LAWS

OCTOBER 19, 1957

Donald Clement Helling Ill.
B.S. 1947, U. S. Military Academy
J.D. 1951, University of Chicago

FEBRUARY 22, 1958

Peter D. Beter W.Va.
A.B. 1947, West Virginia University
LL.B. 1951, National University
William Adrian Cromartie Va.
B.B.A. 1942, University of Georgia
LL.B. 1949, St. John's University
Louis Joseph DeReuil Va.
B.B.A., LL.B. 1954, Tulane University
Howard Lawrence Kitzmiller Pa.
A.B. 1951, LL.B. 1954, Dickinson College

William Lewis McElroy Ala.
A.B. 1940, LL.B. 1942, University of Alabama
Robert Milton Schmidt Mich.
B.B.A. 1951, M.B.A., LL.B. 1954, University of Michigan
Jennings Talbot Smith D.C.
A.B. 1950, LL.B. 1953, The George Washington University

JUNE 4, 1958

Norman Duncan Alexander, Jr. Okla.
B.B.A. 1952, LL.B. 1956, University of Oklahoma
Harry Charles Burgess N.Y.
A.B. 1956, LL.B. 1957, Syracuse University
Edmund Henry Feldman Md.
A.B. 1954, J.D. 1957, The George Washington University
William Paul Gormley Calif.
A.B. 1949, San Jose State College
A.M. 1951, University of Southern California
Ph.D. 1952, University of Denver
LL.B. 1957, The George Washington University
Robert Alexander Kincaid W.Va.
B.S. 1938, Hampden-Sydney College
LL.B. 1954, The George Washington University
Rodger Meek Moore Utah
B.S. 1952, LL.B. 1956, University of Utah

Alfred Rozier Rector Md.
LL.B. 1952, American University
A.B. in Govt. 1955, The George Washington University
Vaino John Riismandel Md.
Diploma in Law 1942, LL.M. 1943, University of Tartu, Estonia
Dr.rer.pol. 1945, University of Jena, Germany
M.C.L. 1956, The George Washington University
Frederick T. Sadler Va.
B.S. 1944, California Institute of Technology
J.D. 1957, The George Washington University
Charles Arthur Sither Md.
LL.B. 1948, University of Kentucky
Sidney Joseph Walker Ill.
B.S. 1942, Eureka College
LL.B. 1949, Miami University

MASTER OF LAWS IN NATIONAL UNIVERSITY

OCTOBER 19, 1957

David Lewis Moore N.Y.
A.B. 1936, Harvard University
LL.B. 1952, A.M. 1955, The George Washington University

MASTER OF COMPARATIVE LAW

OCTOBER 19, 1957

Prasert Choon-ngarm Thailand
B.S. 1941, Royal Thai Naval Academy, Thailand
LL.B. 1951, Thammasastra University of Thailand

Chyun Shik Park Korea
LL.B. 1955, Seoul National University, Korea

February 22, 1958

Raoul Gheorghiu Va.
LL.B. 1932, University of Bucharest, Romania
LL.D., Ph.D. 1951, University of Paris, France

Master of Comparative Law (American Practice)

October 19, 1957

Vladimir M. Kabes Va.
Dr.Jur. 1945, Charles University of Prague, Czechoslovakia

Asta Turner D.C.
Diploma in Law 1942, University of Tartu, Estonia

February 22, 1958

Romulo Alza Manriquez Philippines
LL.B. 1952, Far Eastern University, Philippines

June 4, 1958

Jan Maria Wunsch D.C.
LL.D. 1930, Charles University of Prague, Czechoslovakia

Doctor of Juridical Science

February 22, 1958

Irving Ladimer N.Y.
A.B. 1935, College of the City of New York
J.D. 1940, The George Washington University
Dissertation: "Legal and Ethical Implications of Medical Research on Human Beings"

June 4, 1958

David Hottenstein Va.
A.B. 1922, Western Maryland College
J.D. 1937, LL.M. 1939, The George Washington University
Dissertation: "Military Jurisdiction over Persons not in Uniform"

THE SCHOOL OF ENGINEERING

Bachelor of Civil Engineering

October 19, 1957

Ado Valge D.C.

February 22, 1958

Daniel Roger Chesney D.C.
Davis Halsey N.H.
Phillip Wonn Mast D.C.
Alberto Suleman Yazigi Brazil

JUNE 4, 1958

William Bernard Esser	Va.
Richard Alan Haefs	D.C.
James Bernard Linn	S.D.
Robert Royce Reining, Jr.	Mass.
Vladimir Vratislav Saba Mil.Sc. 1946, Military Academy, Czechoslovakia	D.C.
Franklin Menges Schwartz B.S. 1956, Dickinson College	Md.

BACHELOR OF ELECTRICAL ENGINEERING

FEBRUARY 22, 1958

Herbert Donald Carlson	Md.
Harold Walter Giser	Calif.
Alexander Odarchenko	D.C.
Charles Fenton Rice, Jr.	Md.
Harry M. Siegel	Va.

JUNE 4, 1958

Henry Joseph Antosz	Md.
Donald D. Apperson	N.M.
Manuel Cebollero B.M.E. 1954, The George Washington University	Md.
Jesse Fabian Copsey	Md.
Dean Charles Dickinson	Va.
Edward Charles Dombek	Conn.
James Fong	D.C.
Robert Lannes Fuller A.B. 1939, Bates College A.M. 1941, Boston University	D.C.
Arris John Geranis	Md.
William Robert Hahn, Jr.	Va.
Dale Leslie Hamilton	D.C.
Michael Montgomery Heil	Md.
Charles Maxwell Hunter IV	Md.
Bertrand Leroy Johnson, Jr.	Md.
Philip Dale Kennedy	Va.
Robert Clinton Knowles	D.C.
John De Madaris, Jr.	Va.
William Bergman Munson	D.C.
Roald Robert Oslund	D.C.
Helmut Pruefert	D.C.
Vincent William Rider	N.Y.
Irvin Henry Schick (With distinction)	Pa.
Bernard Rubin Segal B.S. 1949, The George Washington University	Md.
William Ruthven Smith III B.S. 1956, Trinity College	Va.
Ronald Spitalney	D.C.
John Janis Terauds	D.C.
James Bruce Wilson	Va.

BACHELOR OF MECHANICAL ENGINEERING

OCTOBER 19, 1957

Harold Gardner Crim, Jr.	Va.
Abdul-Latif Fakhoury	Jordan
Charles Warren Hurley	Ohio

FEBRUARY 22, 1958

Robert William Bolka	Va.
John Andrew Cannon LL.B. 1940, Southeastern University	Md.
William Walter Dorsey	N.J.

JUNE 4, 1958

Moyassar Yahia Almallah (With distinction)	Iraq
Wylie Winfield Barrow, Jr.	Md.
William Robert Bianchini	Md.
Joseph Edward Boneta, Jr.	Va.
Edward Milton Boothe	Va.
Jack Richard Broesamle	Va.
Richard Allen Browne	Md.
William James East	D.C.
Robert Wright Garner	D.C.
Kurt Heinz Hoppmann	Va.
Walter Severn Jones	Md.
Lester Claude Kreisa	Va.
Geeming Lin	D.C.
Cyril Jacob Marrs	Va.
Frank Ross McAninch	Va.
Philip Leslie Payne	Va.
Gerald William Renton	Va.
Frank Ryerson, Jr.	N.J.
Stanley Foster Staples	Va.
Dominick Robert Traina B.S. 1942, University of Maryland	D.C.
Clarence Benton Ulshafer	Va.
Eugene Wong	D.C.

BACHELOR OF SCIENCE IN ENGINEERING

OCTOBER 19, 1957

Wilbur Stanley Alderson	Md.
William Harry Holt	D.C.
John Lee Jones	Va.
John Raymond Manning	Iowa
Theodore Bachley Pearson	Ky.
Francis Kopp Zugel	Md.

FEBRUARY 22, 1958

Dominick Anthony Bucci (With distinction)	Md.
Lee David Martin	Mo.
Eugene David Milbradt	Va.
James Charles Politz	Fla.
Richard John Pronk	N.Y.
John Wesley Robinson, Jr.	Va.
Maxwell Stander B.S. 1942, College of the City of New York	Md.

JUNE 4, 1958

Moyassar Yahia Almallah (With distinction)	Iraq
Alexander Rola Gordon	D.C.
Ronald Joseph Kransdorf	D.C.
Arnold Charles Meltzer	D.C.
James Alfred Perschy	D.C.
Michael Anthony Sileo, Jr.	Va.
James Earl Zenith B.B.A. 1949, University of Cincinnati	Va.

MASTER OF ENGINEERING ADMINISTRATION

OCTOBER 19, 1957

George John Hall B.Eng. 1937, Catholic University of America	Md.
Joseph Claude LaPointe B.S. 1949, University of Maine	Md.
Chester Alfred Lewis B.C.E. 1942, New York University	N.Y.
Norman Harold Roth B.S. in Met.Eng. 1949, Lehigh University	N.J.

FEBRUARY 22, 1958

John Norman Fresh B.S. in A.E. 1950, Johns Hopkins University	Md.
J. Walter Greer B.S. in E.E. 1929, University of Notre Dame	Va.
Robert James Jackson, Jr. B.S. in C.E. 1937, University of Alabama	N.J.
Edward Mackie MacCutcheon B.S. 1937, Webb Institute of Naval Architecture	Calif.
Charles Joseph Masison, Jr. B.S. 1954, Massachusetts Institute of Technology	Md.

JUNE 4, 1958

John Bernard Alfers B.S. in E.E. 1938, Kansas State College of Agriculture and Applied Science	Va.
Guy A. Best B.S. 1944, U. S. Naval Academy	Md.
Walter Corlett Galvin B.S. in C.E. 1956, Lehigh University	Va.
Paul Douglas Green B.S. 1951, University of Illinois	Ill.
David Ward Johnson B.S. in C.E. 1952, Ohio Northern University	Md.
David Kelsey A.B. 1942, University of Rochester	Va.
William Simon Koschny B.S. in Ch.E. 1949, Northeastern University	Va.
Harold Gray Lewis B.S. in A.E. 1947, North Carolina State College	Md.
Stanley Raymond Marcus B.S. in E.E. 1938, University of Rhode Island	Md.
Edgar Roland McDaniel, Jr. B.S. in I.E. 1940, Virginia Polytechnic Institute	Va.
Conrad Schure B.S. in I.E. 1952, Montana State College	Va.
Homer Belk Sewell, Jr. B.S. in Eng. 1945, U. S. Naval Academy	N.C.
Clarence Billy Stephenson B.S. 1944, U. S. Naval Academy	Ky.

SCHOOL OF PHARMACY

Bachelor of Science in Pharmacy

October 19, 1957

Joan Marie Elso	N.J.

June 4, 1958

Don Rawley Anderson	D.C.	Seymour David Osheroff	D.C.
Robert Alden Berry	Md.	Lawrence Dewitt Payne	Va.
Barry Howard Deutschman	D.C.	Gerald Joseph Quaglia	N.J.
Paul Thomas Fenton, Jr.	Md.	Irwin Jack Rosenberg	D.C.
Charles Nicholas Klein	Va.	Irwin Ruben	D.C.
Eugene Jerrell Korn	D.C.	Jean Musey Thorne	Md.
Julian Edwin Levin	D.C.	(Special honors in Pharmacy)	
Marvin Levy	D.C.	Samuel Thomas Toggas	Pa.
(Special honors in Pharmacy)		Frank Ralph Wojcik	D.C.
Jack Wessel Miller	Md.		

SCHOOL OF EDUCATION

Bachelor of Arts in Education

October 19, 1957

Maury Curtis Church	Va.	Roberta Ladd Miley	Va.
Ian MacLaren French	Md.	Barbara Rose Petty	Va.
Helen Fern Lear Geer	D.C.	Carolyn Richman Schwartz	N.Y.
Zenon Efthymiou Georgiades	Cyprus	Alice Heath Tolliver	Va.
Louise See Henderson	Ky.	Eleanor Elizabeth Warner	D.C.

February 22, 1958

John Cakouros	D.C.	Frances Marian Harris	N.Y.
Lillie Burkhalter Field	D.C.	Frances Stewart Mayse	Va.
Irene Jones Gabriel	Calif.	Clair Edwin Penrod	Va.
Charlotte Matilda Gustafson	D.C.	Velsie Hill Snyder	D.C.
Audrey Doney Hall	D.C.	Ruth Clymer White	Va.
(With distinction)			

June 4, 1958

Helen Ann Bassuener	Va.	Phyllis Ann Nelson	Va.
James Joseph Brennan	D.C.	Ruth Reagan Newheiser	D.C.
Phoebe Woodson Brown	Calif.	Carolyn Gallagher Norris	Va.
Cecilia Ann Campbell	D.C.	Barbara Dare North	Iowa
Gladys Swanson Carlson	Va.	Irene Elizabeth O'Horo	Ohio
Marylou Bernard Cook	Va.	Marilyn Keyes Raper	D.C.
Imogene Small Creech	Md.	(With distinction)	
Laura S. Demos	Va.	Hope Walker Ray	D.C.
Phebe Jane Eglington	Va.	Arlene Faga Rodbell	D.C.
Lillian Mabel Ekendahl	Pa.	Helen Frances Skopic	Pa.
Patricia Ann Fisher	Va.	Carl Steiner	D.C.
Toby Fox	D.C.	(With distinction)	
(With distinction)		Barbara Hinton Stewart	Va.
Barbara Vivian Goldstein	D.C.	(With distinction)	
Marianne Elizabeth Harley	N.Y.	Mary Susan Thayer	Va.
Jean Louise Jablonsky	D.C.	Nella Jean Swart Warner	Mich.
Charlotte Norma Karmazin	D.C.	Jo Ann Webster	Ind.
Suzanne Woodlief McKeever	Calif.		

BACHELOR OF SCIENCE IN HOME ECONOMICS

FEBRUARY 22, 1958

Mary Williams Mager (With distinction)	Va.

JUNE 4, 1958

Mary Kathryne Bowers	Va.
Esther Ruth Cohan	D.C.
Sheila Doris Gallant	N.J.
Lynne Granger (With distinction)	Va.
Shirley Gaddis Rombold	Kans.
Dorothy Mae Wilborn	Mo.

BACHELOR OF SCIENCE IN PHYSICAL EDUCATION

OCTOBER 19, 1957

Martin Thomas Gallagher	Va.

FEBRUARY 22, 1958

Claude Bo Austin	Tenn.
Robert Martin Frederick	N.Y.
Beverlie Anne Giss	D.C.
Audrey Marie McConkey	Md.
Edward L. Sakach, Jr.	Pa.
Robert Gerald Sutton	Pa.

JUNE 4, 1958

Barbara Ann Baldauf	Va.
William John Berry	Pa.
Eugene George Branchi	R.I.
Richard Clayton Claypool	D.C.
William Albert Fackler	Va.
John Frank Henzes	Pa.
Jean Duff Hugo	D.C.
Jack Edward Kesock	Pa.
Helen Roushakes Koustenis	D.C.
David Leroy Liddick	Pa.
Helen Stone Niles	D.C.
Lincoln Antoine Poupore (With distinction)	Va.
William David Tomcykowski	Neb.

MASTER OF ARTS IN EDUCATION

OCTOBER 19, 1957

Lois Heinzman Adkins B.S. 1945, D. C. Teachers College	D.C.
Dorothy Mack Allen A.B. 1935, Howard University	Md.
Phoebe Carter Beath A.B. 1942, Eastern Kentucky State Teachers College	D.C.
Claire Isabel Cassidy Bligh B.S. 1954, D. C. Teachers College	D.C.
Martha Ruth Phillips Bormann B.S. in Ed. 1938, Mississippi State College for Women	Miss.
Ellen Carolyn Brady B.S. 1949, D. C. Teachers College	D.C.
Phyllis Lou Buxbaum LL.B. 1949, The George Washington University	D.C.
Russell John Call Ed.B. 1956, Plymouth Teachers College, New Hampshire	N.H.
Emma Manning Carter A.B. 1935, Howard University	D.C.
Alma Martha Curry A.B. in Ed. 1937, The George Washington University	D.C.
Eleanor Marie Dade A.B. 1953, Howard University	D.C.
Salvatore Paul De Giorgi B.S. 1952, Seton Hall University	Va.
William Belven Ellinger B.S. in Ed. 1955, Pennsylvania State Teachers College, Bloomsburg	Pa.
Curtis Leroy Fichter B.S. in F.S. 1948, Georgetown University	Md.
Doreene Eckley Fish A.B. 1943, Marshall College	D.C.
Fay Elaine Fryberger A.B. 1950, University of Nevada	Nev.
Frances Lewis Garner B.S. 1928, Mary Washington College	Va.
Rose A. F. Gray A.B. 1950, University of Liberia	Liberia
Lawrence Worth Hatch B.S. in Ed. 1950, Madison College	Va.

Joseph Thomas Hickman
B.S. in Ed. 1956, Wittenberg College D.C.
Rodney LeRoy Hoover
B.S. in Ed. 1953, Pennsylvania State Teachers College, Shippensburg Pa.
James Joseph Leo
Ph.B. 1940, Providence College Va.
Patricia Booth Linehan
A.B. 1954, Mount Holyoke College N.Y.
Martha Holstein Mendelson
B.S. in Ed. 1933, University of Pennsylvania Md.
Virginia Grohs Miller
B.S. 1954, D. C. Teachers College D.C.
Doris Virginia Moore
B.S. 1940, D. C. Teachers College D.C.
Ann Connor Mullen
A.B. 1952, San Francisco College for Women Va.
John Franklin Nelson
B.S. 1950, East Carolina College N.C.
Albert Charles Nicholls
A.B. 1941, Albion College Va.
Duane Leslie Packard
A.B. 1950, Minnesota State College, Mankato Ark.
Valdemar Peters
B.S., A.B. 1952, Florida Southern College D.C.
Nelle Crowley Rea
B.S. 1939, Georgia State College for Women Ga.
Richard Ray Roberts
B.S. in Ed., A.B. 1940, Northeast Missouri State Teachers College D.C.
Elizabeth Freeman Robinson
B.S. 1951, Limestone College N.C.
Idahlia Siegel Rogers
A.B. 1950, Goucher College Md.
Nell Elizabeth Secrest
B.S. 1938, University of Minnesota D.C.
Merrill James Shepro
B.S. 1944, D.D.S. 1945, M.S. 1947, University of Illinois Ill.
William Louis Sherman
B.S. 1953, University of Maryland N.Y.
Gladys Holmes Smith
B.S. 1948, D. C. Teachers College Md.
Sam DuBose Tanner, Jr.
B.S. in Ed. 1946, University of Georgia Ga.
Barton Warren Taylor
A.B. 1942, University of Illinois Ill.
Dorothy Hutchins Moore Thompson
A.B. in Ed. 1955, The George Washington University D.C.
Donald Madison Tignor
B.S. 1954, Howard University D.C.
John Amos Todd, Jr.
B.S. in P.E. 1956, The George Washington University D.C.

FEBRUARY 22, 1958

Leonard Irwin Adler
A.B. 1950, Hunter College Va.
Effie Lou Bagwell
B.S. in Ed. 1928, Georgia State College for Women, Milledgeville Va.
Phyllis Wheatley Ford
B.S. 1936, District of Columbia Teachers College D.C.
Vera Williams Mann
A.B. 1941, Texas Christian University Va.
Velma Anderson Matthews
B.S. 1935, Texas Technological College Va.
Jaroslav George Ontko
A.B. 1949, Columbia University Md.
Ethel Huffman Smythe
A.B. 1941, Randolph-Macon Woman's College Va.

JUNE 4, 1958

Arthur Theodore Amtower
B.S. 1952, Maryland State Teachers College, Frostburg Md.
Barbara Helen Bennett
B.S. in Ed. 1955, Madison College Va.
Florence Bernice Berger
A.B. 1952, The George Washington University Ill.
Medicus Ernest Bragg
B.S. 1949, Wake Forest College N.C.
Marjorie Robinson Buchanan
B.S. 1946, D. C. Teachers College D.C.
Anthony Cardinale
B.S. 1952, D. C. Teachers College Va.
Ralph Frank Corrado
B.S. 1953, D. C. Teachers College D.C.
Vera Tymous Davenport
B.S. 1936, D. C. Teachers College D.C.
Gerald John Doran
B.S. 1949, Boston University Mass.
Frank Joseph Facinoli
B.S. 1946, West Virginia Institute of Technology Md.
John Franklin Freeman
A.B. 1948, Pennsylvania State University Md.
Laurence Burton Green
B.S. 1941, U. S. Naval Academy N.Y.
Cynthia Blondinia Keeling
B.S. 1953, D. C. Teachers College D.C.
Donald Allen Kiah
A.B. 1951, Howard University D.C.
Richard Cornwell McCullough
A.B. in Ed. 1955, The George Washington University Md.
Andrew Robert McKelvie
A.B. 1936, St. Vincents College Va.
John Williams Nall
A.B. 1942, University of Arizona Va.
Barbara Klotz Stathis
B.S. 1947, D. C. Teachers College Md.
Earl Kendall Van Swearingen
B.S. 1927, U. S. Naval Academy Va.

Advanced Professional Certificate

October 19, 1957

Florence Wigington Morse D.C.
B.S. in Ed. 1932, Howard University
A.M. 1951, New York University

Osceola Cofield Sexton Va.
B.S. 1940, Alabama State Teachers College, Florence
A.M. in Ed. 1952, The George Washington University

February 22, 1958

Alfred Garrett Henebry D.C.
A.B. in Ed. 1949, A.M. in Ed. 1951, The George Washington University

June 4, 1958

Henry Anthony Agusiewicz D.C.
B.S. in P.E. 1947, A.M. in Ed. 1949, The George Washington University

Jane Gilmer Wilhelm Va.
A.B. 1935, College of William and Mary
A.M. 1937, Duke University

Doctor of Education

June 4, 1958

Jennings Fletcher Ballard Md.
A.B. 1942, East Carolina College
A.M. 1947, Columbia University
Dissertation: "A Study and Analysis of Problems of Navy Officer Candidates"

Mary Louise Collings Va.
A.B. 1925, Wesleyan College
A.M. in Ed. 1926, Northwestern University
Dissertation: "Evaluation of Supervision in the Cooperative Extension Service"

Anna Ruth Meeks Md.
A.B. 1926, Goucher College
Ed.M. 1947, University of Maryland
Dissertation: "An Evaluation of Guidance Services in the Senior High Schools of Baltimore County, Maryland"

THE SCHOOL OF GOVERNMENT

Bachelor of Arts in Government

October 19, 1957

Keith Edward Abbott	Calif.
Barbara Adams	N.Y.
Donald Theodore Amblod	Pa.
Donald Alfred Andrews	N.Y.
Leo Ballard	D.C.
Richard Marshall Berry	Va.
David Swaine Boesch	Md.
John James Bordelon	La.
John Michael Brozena	Pa.
Roy Edmond Carver	Mich.
Lois Jane Cobb	Pa.
Alan Park Davitt	Mich.
Stanley Drexler	N.Y.
Vello Ederma	Md.
Pierre Andre Favre	Switzerland
Gloria Girton	D.C.
Harold Herbert Holland	Va.
Raymond James Koski	Va.
Theodore Raymond Leneski	Md.
David Lawrence Luebke (With distinction)	Wis.
James Martin McClymond	Iowa
John Joseph McCormack, Jr.	Va.
Burton Roy Minkin	Maine
James Robert Newton	Va.
Nicholas Stephen Nunzio (With distinction)	D.C.
Ralf George Peucker	Va.
James Riddle	Pa.
Thomas Otto Ruppert, Jr.	Va.
Frank Wesley Wilson	N.Y.
Frank George Wolf	Md.

FEBRUARY 22, 1958

Barbara Anne Ames (With distinction)	Va.
Gerald Thomas Brady	D.C.
Carolyn Kistler Buttolph (With distinction)	D.C.
Richard Edward Cohen	Va.
Daniel Clinton Drullard	D.C.
Carl Wilbur Easton	Va.
Vernon David Elder	D.C.
Barbara Jean Eschmeyer	Va.
Stratton Michael Frank	Fla.
Frank Harrison Free	Va.
Curtis Lee Funkhouser	Va.
Edward Hogue Funston III	Kans.
Edward Joseph Garro	Nev.
Peter Gianukakis	N.Y.
Norman Morgan Green	Va.
Roy Bernard Hebel	Ill.

Edward Murray Heflin	D.C.
Eugene Gary Horowitz (With distinction)	D.C.
Anthony Richard Jonkers	D.C.
Daniel Lamanna	D.C.
Joseph Rafe Lockaby	N.C.
David Marcus	Pa.
Edward Thomas Martowicz	Ohio
James Maurice Ogletree	Ga.
Thomas Joseph Pierpoint	Va.
Hugo Pineda	Va.
Gerald Ray Rudd	Va.
Agnes Isabel Gomez Sanderson	D.C.
Raymond Claude Schiller	Md.
John Carruthers Taylor	D.C.
Roger Wickersham Turner	D.C.
Paula Lora Underwood	D.C.
Carl Edwin Valladares	Calif.

JUNE 4, 1958

Ernest Sigmund Auerbach	Md.
Kenneth Holmes Bailey, Jr.	N.Y.
Warren Esch Barley	D.C.
Nancy Blandford Bealle	D.C.
Thomas Howard Beechy	Va.
Stanley Elliott Berger	D.C.
Valerie Louise Berman	N.J.
Philip Aaron Bernstein	D.C.
David Quentin Bradley	D.C.
William Theodore Brown	Va.
Sondra Reedy Catoe	Va.
Peter Christie	Md.
Audrey Hope Cleveland	N.J.
Demetrios Condeelis	N.Y.
Arthur James Conlon	N.Y.
Richard Kelsey Cook	N.Y.
William Kyler Craven	Ga.
Jean Ann Creel	Md.
Richard Ellis Crumb	N.Y.
Donald Duane Degner	Va.
Jimmie Wade Dewberry	Va.
Charles Lowell Downs	Ill.
Rita M. Draina	Pa.
Raymond Eugene Durley	Va.
Edward Moody Felegy	Pa.
Raymond Garcia	Md.
Lyle James Gardner	Va.
James Paul Gatley	Va.
Robert Frederick Gerst (With distinction)	D.C.
Constance Ann Glassburn	Del.
Edward Russell Gresham, Jr.	Va.
Sara Fair Griffith (With distinction)	Md.
Robert James Hanna, Jr.	Md.
Marion Norton Hardesty, Jr.	Md.
Nathaniel William Hauser, Jr.	Md.
Ronald Gustav Heinrich	Iowa
Herbert Miley Holtzman, Jr.	Va.
Joseph Chaim Horenstein	D.C.
Paul Allen Hynes	D.C.
Ruth Anne Irwin	Pa.

Chong Hoon Kim	Va.
William Robert King	Va.
Hubert Nathaniel Lacey	Va.
Charles Chester Lanson	Pa.
John Michael Larson	Va.
Laurance George Locke	N.Y.
Kay Jean Maddock (With distinction)	Va.
Janet Katherine Marshall	Calif.
Paul Frank Meyers, Jr.	Md.
Imelda Chavez Miller (With distinction)	D.C.
Jeannine Delores Miller	Md.
Andrew Louis Naglak, Jr.	Pa.
Arthur Ramond Neira	Va.
James Roger Newheiser (With distinction)	Va.
John Nicoll	N.Y.
William Evan Owen	D.C.
James Joseph Pasztor	Va.
Robert Sawyer Perry	D.C.
Benjamin Franklin Pilson	D.C.
Sally Martin Pyne	N.J.
Robert Regidor	D.C.
Alex Rode (With distinction)	D.C.
Edward Michael Sacchet	D.C.
David Mario Salto	D.C.
Margaret Talbott Slingluff	Md.
James Richard Stevens	D.C.
Joseph Jacob Tamer	Va.
Thomas Edwin Topping	D.C.
Orville Wray Varley	Pa.
John William Walker	D.C.
Elizabeth Ann Wallace	Md.
Frank Randall Warren (Special honors in Statistics)	Va.
Fred Winfield Weitzel	Md.
Ronald David West	D.C.
Robert Albert Wilhelm	Md.
Bruno Hyacinth Zurad	Ill.

MASTER OF ARTS IN GOVERNMENT

OCTOBER 19, 1957

Robert Allan Emken Va.
B.S. 1951, University of Maryland
Kenneth Willard Johnson Ill.
A.B. 1949, Carthage College
B.D. 1950, Chicago Lutheran Theological Seminary

Richard LeRoy Springer Ohio
A.B. 1952, University of Toledo
Marjorie Gibson Guggenheim D.C.
A.B. 1954, The George Washington University

FEBRUARY 22, 1958

John William Hennessy Conn.
A.B. 1951, The George Washington University
William Everette Laird, Jr. Fla.
B.S. 1956, John B. Stetson University

Chung Taek Lim Korea
B.L. 1949, Seoul National University, Korea
Gerald Schwab N.J.
A.B. 1949, University of Chicago
A.B. 1951, Stanford University

JUNE 4, 1958

Wesley Dwight Boles Calif.
A.B. 1953, University of California at Los Angeles
Robert Thomas Burke N.Y.
A.B. 1947, Princeton University
Cecil Edward Combs Texas
B.S. 1936, U. S. Military Academy
Rosemary Mahoney Connor Va.
B.S. 1939, San Diego State College
Oscar Charles Disler Va.
A.B. in Govt. 1945, The George Washington University
Edward Patrick Fitzgerald Mass.
B.S. in B.A. 1955, Boston College
Annabelle Schreiber Jaffe Md.
B.S. 1944, University of Cincinnati
Robert Richard Kierce Va.
B.S. 1950, Bucknell University
Myron L. Loe D.C.
A.B. 1951, The George Washington University
Bradford William Miller, Jr. N.Y.
A.B. 1954, New York State Teachers College, Albany

George F. Mills Md.
A.B. 1954, The George Washington University
Owen Smoot Nibley Va.
B.S. 1950, U. S. Military Academy
Matthew Richard Pasquale Md.
A.B. in Govt. 1953, The George Washington University
Alfred Richard Reuther, Jr. Mich.
A.B. 1956, Michigan State University of Agriculture and Applied Science
Leveo Victor Sanchez Va.
A.B. 1954, New Mexico Highlands University
Carlos Sanson-Teran Nicaragua
A.B. 1953, The George Washington University
Harry Paul Stumpf Va.
A.B. 1954, University of Colorado
Jerry Daniel Sullivan Pa.
B.S. 1955, Duquesne University
Vera Eileen Thompson Md.
B.S. 1951, Columbia University
Montgomery King Winkler Calif.
A.B. 1954, Whittier College

MASTER OF ARTS IN PERSONNEL ADMINISTRATION

OCTOBER 19, 1957

Merlyn Donald Holmes Minn.
B.S. 1935, U. S. Naval Academy

FEBRUARY 22, 1958

Thomas Anthony McMahon Md.
A.B. 1951, The George Washington University

JUNE 4, 1958

Christian John Goll Va.
B.S. in B.A. 1941, Rutgers University
Robert Martin Kemp Calif.
B.S. 1955, University of Maryland
Jessie Edith Mullins Va.
A.B. 1949, The George Washington University

Anilee E. Rollins W.Va.
B.S. 1953, Concord College
Freda Gower Ward Md.
A.B. 1953, Southern Illinois University

Master of Arts in Public Administration

October 19, 1957

Allen Beverly Commander La.
B.S. 1952, McNeese State College
John Daniel Edward Gallivan III Conn.
B.M.E. 1943, Catholic University of America

Paul John Pflueger Pa.
A.B. 1947, Pennsylvania State University
M.B.A. 1957, University of Michigan

February 22, 1958

Russell Herbert Brannon Okla.
B.S. 1954, Oklahoma State University

June 4, 1958

Jerry Francis Flicek Minn.
B.S. 1956, University of Maryland
Gilbert Gude Md.
B.S. 1948, Cornell University
Gail Franklin Sedgwick Va.
B.B.A. 1953, Washburn University

Thomas Joseph Stratton Md.
A.B. 1956, The George Washington University
Robert Jerome Wood Va.
A.B. 1940, S.T.B. 1942, S.T.L. 1944, St. Mary's Seminary and University

Master of Business Administration

October 19, 1957

George Joseph Anzelon Calif.
B.M.E. 1941, College of the City of New York
Oscar Franklin Baldwin Fla.
A.B. 1952, University of Florida
Walter Wilson Bennett Wyo.
B.S. in M.S. 1955, University of Maryland
Charles Cushman Bliss Calif.
A.B. 1937, University of California at Los Angeles
Edward Leo Brady Calif.
A.B. 1941, Loyola University of Los Angeles
Eugene Allen Carter Wis.
B.S. 1939, Upper Iowa University
Earle Mark Cole Texas
B.S. in M.S. 1956, University of Maryland
Talmage DeWitt Cooper, Jr. Utah
B.S. in Forest Mgt. 1940, Utah State Agricultural College
Luther Christian Cox Md.
B.S. in Ed. 1940, Maryland State Teachers College, Towson
Robert Paul Daly Mass.
B.S. in M.S. 1956, University of Maryland
Claude Joseph Doiron, Jr. La.
B.S. 1941, Louisiana State University
William Bradford Dudley Fla.
B.S. 1943, U. S. Military Academy
Claire Alfred Pelton Duffié Pa.
B.S. 1942, U. S. Military Academy
Joseph Sheldon Dyson Mo.
B.S. in E.E. 1950, U. S. Air Force Institute of Technology

Marion Lee Farmer Kans.
A.B. 1951, University of California at Los Angeles
Harold Gregory Garber Mo.
A.B. 1939, Washington University
A.B. 1948, University of California at Los Angeles
Irving Abraham Goldner Conn.
A.B. 1940, Yale University
Percy Lewis Jones Pa.
A.B. 1951, Sacramento State College
John Bernard Kelly Mass.
B.S. in M.S. 1956, University of Maryland
Carroll Irvin Leith, Jr. Va.
B.S. 1938, Virginia Polytechnic Institute
David Lewis Ohio
B.S. in M.S. 1954, University of Maryland
Vincent Elmore Mason Calif.
B.S. in M.S. 1956, University of Maryland
Roger William Nestle Mich.
B.S. in M.S. 1955, University of Maryland
Ronald Albert Paige Mass.
B.S. in B.A. 1942, Boston University
James Francis Sullivan, Jr. Pa.
B.S. in M.S. 1956, University of Maryland
Lucius Theus Ill.
B.S. in M.S. 1956, University of Maryland
Eugene Frederick Tyree Ky.
A.B. 1941, Kentucky State College
Walter James Wilson Fla.
B.S. in M.S. 1954, University of Maryland

February 22, 1958

Victor Francis Donnelly Va.
B.S. 1949, Seton Hall University
Robert Frederick Edwards Va.
B.S. 1947, University of Maryland
Roy Lamar Holley Ala.
B.B.A. 1951, University of Texas
Douglas George McAusland Wis.
B.B.A. 1957, University of Wisconsin
Gérald Rivest Canada
A.B. 1953, University of Montreal, Canada
James Lee Sibley Texas
B.B.A. 1948, University of Houston
Mary Bishop Wilkinson N.Y.
A.B. 1948, The George Washington University

June 4, 1958

Ellis Franklin Anderson Pa.
B.S. 1956, University of Maryland
Kenneth Willis Anderson Ohio
B.B.A. 1947, University of Minnesota
John Herbert Bailey Mass.
B.S. 1957, University of Maryland
Frank Austin Blackwood Ohio
B.S. in M.E. 1940, University of California
Warren Emerson Blair D.C.
LL.B. 1940, DePaul University
James Warren Botten N.D.
B.S. 1941, U. S. Naval Academy
Howard Youe Bryan Va.
B.S. 1953, Municipal University of Omaha
Alfonso Hugh Butera Pa.
B.S. 1954, University of Maryland
Lewis Winston Chick Calif.
B.S. in B.A. 1940, University of Southern California
James Francis Conlon Ill.
A.B. 1951, New Mexico Highlands University
John Michael Daniels N.Y.
B.C.E. 1941, New York University
Walter Arthur Gagne, Jr. Conn.
B.S. 1950, University of Connecticut
Donald John Gehri Wis.
B.S. 1952, University of Maryland
David Murray Gillis Md.
B.S. in B.A. 1951, Georgetown University
Walter William Grant Pa.
A.B. 1951, Pennsylvania Military College
Edgar Henry Heald Texas
A.B. 1939, Texas Technological College
Herbert George Hoehl Pa.
B.S. 1956, University of Maryland
Harold Herbert Holland Va.
A.B. in Govt. 1957, The George Washington University
James John Houston Pa.
B.S. 1954, University of Scranton
Mary Gound Hower Va.
A.B. 1950, College of William and Mary
Jack Gardner Hudson N.Y.
B.S. 1942, U. S. Naval Academy
Robert Edmund Hurley Mass.
A.B. 1935, Bowdoin College
Charles Henry Jennings Va.
B.S. in B.A. 1953, Virginia Polytechnic Institute
Harold William Johnston Wash.
A.B. 1941, University of Washington
Nicholas J. Kasun, Jr. Mich.
A.B. 1947, Wayne University
Joseph Clifton Kemp, Jr. La.
B.S. 1942, U. S. Naval Academy
M S. 1950, U. S. Naval Postgraduate School
William George Kissell Pa.
B.S. in M.S. 1955, University of Maryland
Gust George Koustenis D.C.
B.S. in Phar. 1955, The George Washington University
Chester Robert Langer Calif.
A.B. 1941, University of Washington
William Gordon MacLean, Jr. Minn.
B.S. 1957, University of Maryland
William Allen Mather Texas
B.S. 1956, University of Maryland
Charles Leo Nagle III Ark.
B.S. 1942, Louisiana State University
Paul Benton Nicks Texas
B.S. 1940, Texas Agricultural and Mechanical College
Daniel Reuther, Jr. Fla.
B.S. 1957, University of Maryland
Stephen Joseph Riordan, Jr. Ore.
B.S. 1941, U. S. Naval Academy
Joseph Paul Romeo Pa.
A.B. 1939, The George Washington University
James Boyd Sanford Iowa
B.S. 1954, University of Maryland
Ralph Lindley Smith Fla.
B.S. 1957, University of Maryland
Thomas Theodore Tulipane N.Y.
B.S. 1957, University of Maryland
George Gustav Wehrstedt Md.
B.S. 1936, Virginia Polytechnic Institute
Harry Clifford White Ariz.
B.S. 1940, U. S. Naval Academy
John Parker Wilbern Minn.
A.B. 1940, University of Minnesota
Robert Gray Wissman Kans.
B.S. 1953, University of Maryland

Doctor of Business Administration

February 22, 1958

Warren Kenneth Watson Mich.
B.B.A. 1938, Michigan State University
M.B.A. 1949, University of Pennsylvania
Dissertation: "The Use of Management Consultants by the United States Air Force"

JUNE 4, 1958

Robert Fenn Towson, Jr. A.B. in Govt., M.B.A. 1952, The George Washington University Dissertation: "An Analysis of Outside-Staff Services Available to Management (with Emphasis on Their Application to the Special Problems of Small Business)"	Md.

THE COLLEGE OF GENERAL STUDIES

ASSOCIATE IN ARTS

OCTOBER 19, 1957

Reginald Dunbar Barta	Minn.
Fred Joseph Diemer	Md.
Robert Henry Duwel	Ohio
Donald Hubbard	N.Y.
Estelle Agnes Jones	N.Y.
Donald Lacey	Pa.
Walter Richard Lewison	Mass.
Wheeler Bryson Lipes	Va.
Norma Maine Loeser	N.Y.
Alvin Ernest Rusche	S.D.

FEBRUARY 22, 1958

Richard Bauer	D.C.
Francis Joseph Bergin	N.Y.
David Clinton Bundy	Ohio
Joseph Thomas Doyle	N.Y.
Elroy E. Harris	Texas
Kenneth E. Joye (With distinction)	Va.
James Keith	Va.
John Michael Mikulka	Conn.
Vernon James Peebles	Ill.
Eugene Carl Reinhardt, Jr. (With distinction)	D.C.
Thomas Rielly	R.I.
Joseph Gilpin Young Sanborn	Utah
Lloyd Wilson Wood	D.C.

JUNE 4, 1958

William Francis Abernathy	Calif.
George Witmer Allen	Va.
Alton Jaspar Bloxom	N.M.
Horace Edward Cutler	Mass.
Walter Frederick Dreyer	Md.
Bernard Marlen Engleberg	Md.
Marjorie Neil Block Hansford	Fla.
Floyd Early Hower, Jr.	Pa.
Wilbur Howard Keck	Pa.
William Clayton Kepner	Ind.
Samuel J. Loyd	Va.
Walter Maher, Jr.	Ohio
Harold Gordon McRay	Mo.
Marino Mussomeli	N.Y.
John Kensington Parker	Ohio
Michael Pivarnik, Jr.	Pa.
Harlan Van Alen Smith	Md.
Raymond Walker	Va.
Victor Emile Werner	N.Y.
Lucia Ruth Zurawski	N.Y.

BACHELOR OF ARTS

OCTOBER 19, 1957

John Quintus Beckwith	N.C.
Norwood Joseph Brown	Pa.
Walter Edward Cook	Texas
Dean Kemple Good (With distinction)	Pa.
Jacob Hagopian	R.I.
Edward George Kar (With distinction)	Ohio
Richard Erwin Knie	Conn.
Marvin Henry Larsen	Texas
Henry Franklin Murray	Texas
Joseph Elmer Puccini, Jr.	Texas
Richard Rudolph Thomas	Wash.
Felix Bernard Wywal	R.I.

FEBRUARY 22, 1958

Belton Goodman Atwell	Fla.
Reginald Dunbar Barta	Va.
Katharine Kennedy Everett	D.C.
Charles A. Hoffman, Jr.	Pa.
Frank Ross Jones	La.
Donald Lacey	Pa.
Norma Maine Loeser	N.Y
William Rosen	Calif.
John Gustave Sommer	Md.
Reginald Woodrow Wagner	Fla.
Mervyn Williams (With distinction)	Va.

JUNE 4, 1958

Leroy Alger Nev.
Jack Otis Arford Okla.
John Joseph Barteluce N.J.
Richard Bauer Oreg.
Howard V. Brennan Va.
Julius James Caso N.J.
Donald Alfred Dertien Mich.
Frederick Earl Hughes Ill.
William Katzenstein Va.
Wilbur Howard Keck Pa.
William Clayton Kepner Ind.
Sebastian Bernard Koenig Calif.
Cyrus Jackson Lemmon Colo.
Walter Richard Lewison D.C.

Kenneth Laurie McFadden Ark.
Ruth Louise Olson N.M.
Edward James Osten Va.
John Polanskey, Jr. Pa.
Benjamin Anthony Rhoades, Jr. Mich.
Alvan Ernest Rusche S.D.
Edmund Gambell Smith Ark.
Knute Frederick Knudsen Thorpe N.Y.
Roger Leonard Van Handenhove Belgium
Fred William Vetter, Jr. Wis.
William Andrew Weir Fla.
Nan Beaumont Word Wash.
Roger Lawrence Young Kans.

MASTER OF ARTS

OCTOBER 19, 1957

Thomas Carroll Keach Ky.
A.B. 1935, Western Kentucky Teachers College
George Espy Ridgeway Kinnear II Fla.
A.B. 1957, The George Washington University
James Albert Michener Pa.
A.B. 1941, Amherst College

Charles Lindbergh Sears D.C.
B.S. in F.S. 1955, Georgetown University
Clifford Harry West, Jr. Maine
A.B. 1943, University of Maine
Anthony Yannella N.Y.
A.B. 1953, The George Washington University

FEBRUARY 22, 1958

Andrew d'Elia N.J.
B.S. 1940, U. S. Military Academy
George Gail Neffinger Mass.
B.S. in B.A. 1951, University of Florida

Lucy Johnston Rumley D.C.
A.B. 1951, The George Washington University

JUNE 4, 1958

Mary Elizabeth Appleton Ill.
A.B. 1930, MacMurray College
John Joseph Bean Va.
B.S. 1950, College of Charleston
Donald Mayo Bisbee, Va.
A.B. 1954, The George Washington University
Arthur John Casolari Ill.
B.S. in B.A. 1949, Northwestern University
Ovid Clemmons Foote, Jr. Calif.
B.S. 1956, University of Maryland
Kenneth Bliven Gorton N.Y.
B.S. in B.A. 1956, Ohio State University
Thomas F. Guidera N.Y.
B.S. 1956, University of Maryland
Walter Randall Hall Va.
A.B. 1940, Brown University
William O. Harris Va.
B.S.S. 1954, American University

Garrett Leroy Hill Texas
B.S. 1956, University of Maryland
Logan Earl Hysmith Okla.
A.B. 1930, University of Oklahoma
LL.B. 1932, Cumberland University
Richard Berea Marks W.Va.
B.S. in B.A. 1954, Morris Harvey College
A.M. 1955, Marshall College
James Roger Martin Texas
B.S. 1942, North Texas State College
Henry Franklin Murray Texas
A.B. (C.G.S.) 1957, The George Washington University
Carlos Lee Russell Fla.
B.S. in B.A. 1932, University of Florida
James Carlin Thomas Ohio
A.B. (C.G.S.) 1957, The George Washington University
Robert Lukens Wood, Jr. Md.
B.S. 1955, Sophia University, Japan

THE GRADUATE COUNCIL

DOCTOR OF PHILOSOPHY

OCTOBER 19, 1957

Virginia Lee Blackford D.C.
B.S. 1949, American University
M.S. 1951, The George Washington University
Dissertation: "The Influence of Various Metabolites on the Growth of *Coxiella burnetii* in Monolayer Cultures of Chick Embryo Entodermal Cells"

Janet Wilson Hartley D.C.
B.S. 1949, University of Maryland
M.S. 1951, The George Washington University
Dissertation: "Comparative Studies of the Human, Mouse, and Guinea Pig Salivary Gland Disease Viruses"

Ariel Cahill Hollinshead Pa.
A.B. 1951, Ohio University
A.M. 1955, The George Washington University
Dissertation: "A Study of the Effects Produced by Purines and Related Compounds on Virus Propagation"

Charles Arthur Toompas W.Va.
A.B. 1938, West Virginia University
A.M. 1950, The George Washington University
Dissertation: "The Effects of a Bacterial Polysaccharide upon Some Physiologic Responses in the Rat"

Andrew John Vargosko, Jr. Conn.
B.S. 1951, University of Maryland
M.S. 1953, The George Washington University
Dissertation: "An Immunological Comparison of Some Colicines and Bacteriophages, with a Biological and Physicochemical Comparison of the Colicines"

February 22, 1958

Frederick Merkel Bayer Fla.
B.S. 1948, University of Miami
M.S. 1954, The George Washington University
Dissertation: "A Faunistic Study of the Shallow-water Octocorallia of the West Indian Region"

Joseph Blum Md.
B.S. 1940, College of the City of New York
A.M. 1948, The George Washington University
Dissertation: "Banach Space Functionals and Matrix Summability Methods"

Jacob Bernard Chassan D.C.
B.S. 1939, College of the City of New York
A.M. 1949, The George Washington University
Dissertation: "Probability and the State of Mind"

Albert Frank Debons Va.
B.S. 1953, Syracuse University
M.S. 1955, The George Washington University
Dissertation: "The Mechanism of Participation of the System Ascorbic Acid $\rightleftarrows$ Dehydroascorbic Acid in Corticosteroid Metabolism"

Robert Thomas Giuffrida N.Y.
A.B. 1949, A.M. 1950, University of Rochester
Dissertation: "The Adjective in the Works of Notker"

Harrison Melsher Holland Wash.
A.B. 1944, University of Washington
A.M. 1949, Columbia University
Dissertation: "The Minseito Party of Japan (1927–1940) — Its Antecedents, Structure, and Operation"

David Renwick Kerr Va.
A.B. 1914, Columbia University
A.M. 1952, The George Washington University
Dissertation: "Military Subject Matter in Galdós"

Julia McCain Lampkin Ala.
B.S. 1952, University of Alabama
M.S. 1954, The George Washington University
Dissertation: "The Response to Cortisone and Related Steroids and the Development of Cortisone Resistance in a Cortisone-sensitive Lymphosarcoma of the Mouse"

Walter Allen Shropshire, Jr. D.C.
B.S. 1954, M.S. 1956, The George Washington University
Dissertation: "A Detailed Action Spectrum of the First-Positive Phototropic Tip-Curvature of *Avena*"

June 4, 1958

Nicholas Michael Cambosos D.C.
B.S. 1953, M.S. 1954, The George Washington University
Dissertation: "The Effect of Drugs on the Distribution of Cx-Reactive Protein and Sialic Acid in Rabbit Serum"

Robert Spencer David Calif.
B.S. 1938, University of California
A.M. 1949, The George Washington University
Dissertation: "Social Insurance in an Expanding Economy, 1935–1980"

Roy Lester Evans Ind.
B.S. 1949, Indiana Central College
M.S. 1954, The George Washington University
Dissertation: "A Study of the Preparation and Properties of Some Modified Proteins: I. Guanidination of Insulin; II. Nitroguanidination of Human and Bovine Serum Albumin"

Donald Franklin Flick Va.
A.B., M.S. 1947, West Virginia University
Dissertation: "Studies on Fat Metabolism in Young Male Rats Exposed to Cold"

Vernon Jack Fuller Md.
B.S. 1951, University of Maryland
M.S. 1953, The George Washington University
Dissertation: "A Study of the Purine and Pyrimidine Bases in Cultures of *Entamoeba terrapinae*"

Frank Merril Hardy Md.
A.B. 1949, New York University
M.S. in P.H. 1951, University of North Carolina
Dissertation: "Growth of Equine Encephalomyelitis Virus in Monolayer and Suspended Cultures of L Cells"

Richard Morton Michaels D.C.
B.S. 1949, Bates College
A.M. 1953, The George Washington University
Dissertation: "Intensity Difference Limens for Narrow Bandwidths of Noise at Various Pulse Lengths"

Azizali Farrukh Mohammed Pakistan
A.B. 1947, University of Bombay, India
A.M. 1949, University of Sind, Pakistan
Dissertation: "Some Aspects of the Economic Impact of Foreign Aid on an Underdeveloped Country: the Case of Pakistan"

Julius Earle Officer Md.
B.S. 1950, University of Idaho
Dissertation: "The Growth and Morphological Development of Two Psittacosis Strains in Tissue Cultures"

Raymond Howard Reno Ind.
A.B. 1950, A.M. 1951, The George Washington University
Dissertation: "The Theological Background of Christopher Marlowe's *The Tragical History of Doctor Faustus*"

Robert Watson Sylvester Va.
A.B. 1951, A.M. 1952, The George Washington University
Dissertation: "The Guidance Function in Manpower Recruitment for the United States Army"

George Vartkes Vahouny Va.
B.S. 1953, M.S. 1955, The George Washington University
Dissertation: "Studies on the Absorption of Cholesterol in the Rat"

HONORARY DEGREES

November 27, 1957

Mohamed V, King of Morocco—*Doctor of Laws*

February 22, 1958

Dorothy Betts Marvin—*Doctor of Humane Letters*
Wilhelm Morgenstierne—*Doctor of Laws*
Margaret Chase Smith—*Doctor of Laws*
Louis Booker Wright—*Doctor of Laws*

June 4, 1958

Allen Varley Astin—*Doctor of Science*
Daniel LeRay Borden—*Doctor of Science*
Charles Sylvanus Rhyne—*Doctor of Civil Law*
Robert Daniel Murphy—*Doctor of Laws*
Wilber Marion Brucker—*Doctor of Laws*

RECIPIENTS OF AWARDS

1957–58

SCHOLARSHIPS

The Alpha Zeta Omega Scholarship: Arthur Paul Herrmann, Jr.

The Alumni Scholarships: William Thomas Daly, Richard Hale Fischman, Joseph Donald McLaughlin, Jr.

The American Foundation for Pharmaceutical Education Scholarships: Lewis Albert Citrenbaum, Jean Musey Thorne

The American Society of Women Accountants Scholarship: Jeannine Delores Miller

The Byron Andrews Scholarship: Elizabeth Anna Fretz

The Anna Bartsch Scholarship: Ruth Dickerson

The Everett Lamont Bradley Scholarship: Ward Bullard Hurlburt

The Emma K. Carr Scholarships: Warren Esch Barley, Edmund Parke Crump, Roderick Michael Groves, Eugene Gary Horowitz, Pedro Manuel Macedo, Malcolm Alan Martin, Henry Casabianca Mayo, Alan Donald Mighell, James Alfred Perschy, Richard Lee Potterton, Edward Michael Sacchet, Stephen Arthur Thau, Paul Joseph Truntich, David Marvin White

The Henry Harding Carter Scholarship: Jerry Kaminetzky

The Maria M. Carter Scholarship: Wayne Alton Davis

The Daughters of the American Revolution Scholarship: Mary Louise Engel

The Isaac Davis Scholarship: David Knowlton Trask

The District of Columbia Pharmaceutical Association Scholarship: Susan Eleanora Murray

The Charles Worthington Dorsey Memorial Scholarship: Walter Lawrence Baumann

The School of Engineering Scholarships: John Frederick Callow, Robert Stanley Dunn, William Perazich, Ihor Myroslav Procinsky

The Henry Parsons Erwin Scholarship: Henry Donald Beck

The Robert Farnham Scholarship: Helen Louise Goldberg (fall semester)

The General Motors College Scholarships: John Pierce Donley, Richard Sides Lykes, George Bruce Taylor

The Anna Spicker Hampel Scholarship: Edna Jean Serber

The Elma Lewis Harvey Scholarship: Violet Ella Bowen

The Hazelton Scholarship: Frances Marion Foltz

The High School Scholarships: David Ernest Aaronson, Bernard Ralph Aserkoff, John Ross Bailer, Elizabeth Corinne Bailey, Arthur Michael Bauman, Leonora Alice Branca, Barbara Ann Brown, Beverley Andrea Brown, Robert Louis Cate, Robert Selwyn Chabon, Toy Ping Chan, Elaine Mary Chipouras, John David Clough, Nancy Ann Davis, Anna Nicholas DeKonschin, Barbara Ruth Dinkin, Elizabeth Jane Dittenhafer, Michael William Dix, Brian Charles Dohne, Park William Espenschade, Jr., Edith Margaret Fenton, Patricia Dee Gillam, Angela Fern Gnotta, Arlene Joan Green, John Randolph Hall III, Margaret Jean Hastings, Stanley David Heckman, Otfried Willibald Georg Heybey, Mary Elizabeth Hoffman, Harold Duane Hoiberg, Louise Clark Huston, Judith Zelda Jaffe, Letty Katz, Lawrence Klein, Nancy Jean Koontz, Marian Blanche Lechlider, Robert Gipsy Lineberry, Carol Ida Linn, Dorothy Katherine Marshall, Carolyn Ione McKnight, Barton Paul Meyers, Carol Lee Miller, Martha Jane Mitchell, Carol Ann Monish, Faye Glee Motyka, Elizabeth Ann Murray, Stanley Irving Music,

David Mermod Perkins, Edith Caylor Petersilia, Stanley Sinclair Pickett, Stell
Janie Pridgen, Martha Raye Propst, Martin Hugh Reichgut, Robert Holde
Roach, Margaret Elizabeth Robinson, Sharon Geoghegan Ronningen, Jame
Edward Roper, Ian Austin Rule, William Albert Schmidt, Ann Marie Sneer
inger, Mandell Don Stearman, David Perry Steinman, William Taft Stuart,
Sandra Jean Sweadner, William Graves Talentino, Alice Rene Turner, Glendo
Donnell Willey II, Robert Marion Wilson, Wailey Lake Wing, Anna Margare
Zamoyska

The High School Discussion Conference Scholarship: Dorothy Alice Lund

The Kappa Alpha Theta Scholarship: Mildred Jane Layton

The Law School Scholarships: Dale Louis Carlisle, William James Critchlow III,
Philip Arthur Gragan, JoAnne Marie Kiely, Reed L. Moss, William Albert Neal,
Dennis M. Olsen, Noel Irving Smith (fall semester)

The Eugene and Agnes E. Meyer Scholarships: Eva Katharine Blackburn (spring
semester), Hans Ragnar Bode, Edward Donald Coxen, Stephen Karl Dietz,
Sheila Footer, Marion Ethel Green, Maiko Kobiashvili, Kay Joan Maddock,
Peter Daniel Minick (fall semester), Paul Edgard Rudolph Nordquist, Jr., John
Daniel O'Neale, Mary Kay Patterson, William Stuart Riggsby, Eunice Maureen
Root, Mary Susan Thayer

The A. Morehouse Scholarship: Henry Justin Ferry

The National League of Masonic Clubs Scholarship: Ronald Joseph Kransdorf
(fall semester)

The Newspaper Scholarships:

The Evening Star: John Gerald Leyden, Richard Karl Tierney

The Washington Post and Times Herald: Arthur James Conlon, Charles Narber
Finney, Robert Francis O'Connor, Jerry Coleman Smiley

The Panhellenic Association of Washington, D. C., Scholarship: Marilyn Joan
Hogenson

The Phi Delta Gamma Scholarship: Lena Eloise Grear

The Lula M. Shepard Scholarships: Janace Ann Hamilton, Judith Marie Wilson

The David Spencer Scholarship: Mona Leah Koppel

The Mary Lowell Stone Scholarship: Irena Aldona Krivickas

The Student Activities Scholarships: Nicholas Ralph Anzelmi, Jack Allen Arthur,
Claude Bo Austin (fall semester), Robert James Barbiere, Victor A. Bartlett,
Jr., Howard Orr Bash, Howard Stafford Berger, Jr., William John Berry, George
Edward Bickerton, Richard Martin Bonieskie, John Louis Bouquet, Edgar
George Bowers, Adolph Bernard Brazinsky (fall semester), Henry Frederick
Busky, Frank Charles Campana, John Robert Caraccilio, Richard Charles
Cilento (fall semester), Richard Clayton Claypool, Theodore Paul Colna
Arthur Gerald Cooper, Gino D'Ambrosio, Ronald Arthur Dearden, Ronald
Michael DeMelphi, Michael Ennis, Kenneth Wayne Eriksson, William Albert
Fackler, William Hugh Fearer, William John Flynn, Robert Martin Frederick
(fall semester), Robert Joseph Frulla, Martin Thomas Gallagher (fall semester),
Desmond Francis Gatti, Francis Joseph Gleason, William Ralph Gray (fal
semester), Norman Scott Groves, Eugene Michael Guarilia, Thomas Hagood
Haly, Joe David Haney, Alvin Dwayne Harkleroad, John Frank Henzes, Donald
Charles Herman, Dennis Wesley Hill, Edward John Hino, Marion Elwin Hoa
John Frank Holup (fall semester), Richard Leo Hutsko, William Horace In-
gram, John Anthony Jasiel, Robert Anthony Jewett, John Gilbert Jolly, Helder
Kaarid (spring semester), Jack Edward Kesock, Samuel Ralph Knisley, Warren
Jerome Krick, Ralph Edward Kunze, Joseph Finley Lee, Jr. (fall semester),
Saul Eugene Leibowitz, Theodore Raymond Leneski (fall semester), David
LeRoy Liddick (spring semester), Walter John Ligenza, Ray Michael Looney,
George Hamilton Marshall, Ronald Peter Matalavage, Howard Victor Mc-
Donald, Joseph Edward Ozefovich, Charles Domenick Packan, Charles Leonard

Padgett, Jr., Donald Ray Palmer, Joseph John Paluck, Theodore Bachly Pearson (fall semester), Eugene Posati, Roy Jerome Power, Pennings Randolph, Jr., Ronald Kenneth Reeves, Edward Steven Rutsch, Edward Charles Sakach (fall semester), Michael Harvey Scott, George Senay (fall semester), Jerry Michael Sluger, William Edward Smythe, Albert Harry Snyder, Michael Sandor Sommer, Harold Dale Spaulding, Philip Victor Staub (fall semester), Robert Gerald Sutton (fall semester), Jack Kershaw Tarr, James Kershaw Tarr, James William Taylor, William Eugene Telasky, William David Tomcykowski, James Leslie Turbin (fall semester), Roger Wickersham Turner (fall semester), Lawrence G. Usiskin, Ado Valge, Orville Wray Varley, James Dale Walters, Peter Joseph Wasilewski, William Richard Wells, Wesley Russell Wheeler, Herbert Duane Whetstone, John Alton White, James Samuel Whitehead, John Allen Whiting, John B. M. Wilt, Ellis Bowman Wisler, Jr., Carl Eugene Zalesky

The Charles Clinton Swisher Scholarships: Michael G. Kammen, Elizabeth Hanahan Oliver

The Texaco Scholarships: Charles Olof Johnson, Herbert Swann Wilkinson

The University Foreign Service Scholarship: Marilynn Frances Hoffman

The William Walker Scholarship: Henry Justin Ferry

The John Withington Scholarship: Meredith Abigail Eagon

The Ellen Woodhull Scholarship: Doris May Rosenberg

The Zonta Club Scholarship: Patricia Ann Fisher

PRIZES

1957–58

Alpha Chi Sigma Freshman Awards in Chemistry: Elizabeth Corinne Bailey, John David Clough, Albert Paul Tarasuk

Alpha Chi Sigma Senior Award in Cemistry: Paul Edgard Rudolph Nordquist, Jr.

Alpha Delta Pi Award in Scholarship and Leadership: Edith Margaret Fenton

Alpha Kappa Psi Award in Commerce: James Roger Newheiser

Alpha Zeta Omega Award in Pharmacy: Morton Keroes Hyman

American Institute of Chemists Award in Chemistry: Paul Edgard Rudolph Nordquist, Jr.

Byrne Thurtell Burns Award in Organic Chemistry: Park William Espenschade, Jr.

Martin L. Cannon Memorial Award in Pharmacy: Anna Jirgens

Chi Omega Award in Social Sciences: Beverly Wasserman Talpalar

John Henry Cowles Awards in Government: Kay Joan Maddock, Imelda Chavez Miller

DeWitt Clinton Croissant Award for an essay on drama or the theater: Elizabeth Ellen Evans

E. K. Cutter Award in English: Mary Miles Dupuis

Delta Gamma Award for scholarship, extracurricular activities, and service to the University: Barbara Ann Brown

Delta Zeta Award in Zoology: Michael William Dix

Ellsworth Award in Patent Law: Noel Irving Smith

Jesse Frederick Essary Award to that student who has given promise of sound citizenship and ability in "forthright reporting": Elizabeth Ellen Evans

Joshua Evans III Memorial Award to that man in the graduating class who has demonstrated his signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his fellows: David Richard Millar

Willie E. Fitch Memorial Award in Chemistry: Park William Espenschade, Jr.

Allie S. Freed Award to that member of the graduating class in the School of

Medicine who has demonstrated exceptional proficiency in the field of Preventive Medicine: Charles Hilary Troshinsky

Charles Glover Award to that student in the Law School who has attained the highest average grade in the third-year, full-time course: Mitchell Stein Cutler

Alice Douglas Goddard Award in American Literature: Mary Louise Engel

Edward Carrington Goddard Award in French: Ellen Condon Dowling

James Douglas Goddard Award in Pharmacy: Marvin Levy

Morgan Richardson Goddard Award in Commerce: Carolyn Mae Buttolph

Gardiner G. Hubbard Memorial Award in United States History: David Richard Millar

Kappa Kappa Gamma Award in Botany: Elizabeth Corinne Bailey

John Bell Larner Award to that member of the graduating class of the Law School with the highest scholastic standing: Suzanne Virginia Richards

Huron W. Lawson Award in Obstetrics and Gynecology: Hardin Elling Olson

Martin Mahler Award in Materials Testing: Arnold Lee Snyder, Jr.

Mortar Board Award to the woman student in the Sophomore Class having a scholastic standing of B or higher and the most outstanding record in activities: Letty Katz

Julius S. Neviaser Award in Orthopedic Surgery: Ronald Jack Bortnick

Omicron Delta Kappa Award to that member of the Senior Class who, throughout his course, has done the most constructive work in student activities: Warren Esch Barley

John Ordronaux Awards to the first- and second-year full-time students in the Law School who have attained the highest average grades: Charles James Moeller, Mitchell Stein Cutler (1956–57)

John Ordronaux Award to that member of the graduating class of the School of Medicine with the highest scholastic standing: Robert John Levine

Phi Delta Kappa Award in Teacher Education: Carl Steiner

Phi Eta Sigma Award to the beginning male student attaining the highest scholastic average in his first full term of work: Stanley David Heckman

Pi Beta Phi Award to that member of the Senior Class who, throughout her course, has done the most to promote student activities: Kathleen Mary Denver

Pi Lambda Theta Award in Teacher Education: Toby Fox

Psi Chi Awards in Psychology: Derek Von Roemer, John Anthony Scopino

Ruggles Award in Mathematics: Ernst Schwandt

Sigma Kappa Award in Chemistry: Howard Thiebaut Hill

Staughton Award in Latin: Barbara Joan Dunham

James MacBride Sterrett, Jr., Award in Physics: David Hirsch Fram

Charles Clinton Swisher Historical Club Awards in Medieval History: Claude Edward Bonbrest, Stephen Ralph Judge

Thomas F. Walsh Award in Irish History: Michael G. Kammen

Washington Personnel Association Award for attainment in the field of Business Administration: James Paul Gatley

Alexander Wilbourne Weddell Award for an essay on World Peace: Alex Rode

Zeta Tau Alpha Award in Sociology: Frances Bland Greene

STUDENT ASSISTANTS

June 1, 1957 to June 1, 1958

Accounting: Cohen Richard Beyda, Michael Laurence Gudis, Joe David Haney, Ralph Gubler Jorgensen, John Edwin Martin, James Albert Obeid, Charles Earl Packard II (A.B.), Donald Edward Sinrod, Louis Lee Voegler (A.B.)

Art: Charles Gary Eagan, Mary Elizabeth Hoffman, Theodore Robert McCann (A.B.)

Biology: Samuel Wentworth Anderson, James Anderson Tippens III, Alberto Wanous Vazquez

Botany: Duncan Riggs Burchard, Naomi Violetta Koch, Gerald Libman, Charlene Elizabeth Olsson, LaVerne Helen Richardson (A.M.)

Business Administration: Carolyn Kistler Buttolph, Priscilla Ann Cheek, Robert Bachman Johnson, William Howard Maddox, Jr. (A.B.)

Chemistry: Samuel Heffner Brown, Bernard John Degen, Park William Espenschade, Jr., Vincent Livingston Guandolo, Bernard Alvin Heckman, Howard Fred Kimel, Karin Ursula Koehler, Irena Aldona Krivickas, Gerald Saul Landau, Roger Earl Spitzer

Civil Engineering: Beverley Andrea Brown, Patricia Ann Fisher, Robert Michael Gall, Ronald Joseph Kransdorf, Phillip Wonn Mast, Ronald Max Mayrbaurl (M.S. in C.E.), Arnold Lee Snyder, Jr.

Dramatic Activities: Janet Virnelson Griner

Economics: Katherine Genevieve Dolfis, Paulo Adolfo Spargnapani, Susan Wild

Education: Irene Ruth Wolfe

Electrical Engineering: Karl Brecc Avellar, Julia Flory Cavin, Manuel Cebollero (B.M.E.), Thomas Winslow Coleman, Arnold Charles Meltzer, William Bergman Munson, James Alfred Perschy, Albert Anthony Petrini, Vincent William Rider, Rochelle Susan Slepian, James Bruce Wilson

Engineering Administration: Bharat Bhushan Krishna (B.S.), Olga Sukose

English: Mona Leah Koppel, Eileen Mary Scott, Peggy Jean Terry

Geography: John Carl Lowe, Kathleen Marie Schaub (B.S.)

Geology: Frank Michael Giordano, Charles Ronald Seeger (B.S.)

History: Jean Rice Anderson, Peter Proal Hill (A.M.), Thomas Page Johnson (A.B.), Stephen Ralph Judge (A.B.), Michael Kammen, Carol Patricia Koyen, David Richard Millar (A.B.), Jon Edward Updike (A.B.)

Law: Mitchell Stein Cutler (B.S. in B.A.), William Raines Judy (B.S. in B.A.), David Machanic (A.B.)

Mechanical Engineering: Moyassar Yahia Al-Mallah, Wylie Winfield Barrow, Jr., James Richard Houghton, James Charles Politz, Gerald William Renton, George Bruce Taylor, Eugene Wong

Pharmacy: Edward Lee Catterton, Irwin Jack Rosenberg

Philosophy: Matthew Phillip Perriens (A.B.)

Physical Education for Men: Neil Addison Blair, Eugene George Branchi, Morris Herbert Casper, Robert Joseph Frulla, Dennis Wesley Hill, Bob Lee Sturm (A.B.), Barbara Jean Wash

Physical Education for Women: Beverlie Anne Giss

Physics: Evelyn Marie Baumann, Donald Clive, Otfried Willibald Georg Heybey, Pedro Manuel Macedo, Julie Ann Marsh, George Cloyd Murray, David Mermod Perkins, William Stuart Riggsby, Elmore Charles Williams

Political Science: Thomas Page Johnson (A.B.), Maiko Kobiashvili, Nancy Davis Myers, Sigmund Richard Pincus, Alex Rode, Clarissa Ruttgers (A.B.), Kenneth Nordly Skoug, Jr. (A.M.), Harry Paul Stumpf (A.B.)

Psychology: Samuel Wentworth Anderson, Joan Barbara Begelman, Wilma Jeannette Bushman, Barbara Ann Curley, Grace Cecelia Ferrill (A.B., LL.B.), Hubert Arthur Hardy, Peter William Kyriazis (A.M.), David Alan Loiry (B.S.), Mary Chilton McNeil, Carol Lee Miller, Marilyn Jo Miller, Claudene Seidel (A.B.), Patricia Ann Theisz

Romance Languages: Thomas Henry Connor, Janace Ann Hamilton, Elizabeth Anne Murray

Secretarial Studies: Evelyn Marie Baumann, Velsie Hill Snyder

Sociology: Christine Justin (B.S.), Inez Mary Tonelli

Speech: Helen Frances Cutting (A.M.), Lenore Sue Friedman (A.B.), Stuart

Harold Gelber, Ellen Griffin, Charlotte Matilda Gustafson, Judith Zelda Jaffe, Thomas Alwyn Middlebrooks, Guerdon Saltonstall Trueblood

Statistics: Marabeth June Adams, Katherine Genevieve Dolfis, David Allen Ellis, Henry King Gensler, Joseph Edward Keilin, Laurance George Locke, Derek Von Roemer, Allen Milton Singer (A.B.), Thomas Clair Varley, Frank Randall Warren, Paul Hesse Welch (A.B. in Govt.)

Zoology: Robert Selwyn Chabon, George Fred Creswell, Janet Ann Glenn, Cornelia Loretto Hyatt, Lawrence Alan Jones, John Willson Laskey, Phyllis Marie Oriel, Mary Kay Patterson, Deborah Adele Reznek, Stanley Ivan Rubler, Paul Eppley Spiegler (B.S.), William Frederick Thompson (B.S.)

STUDENTS REGISTERED

SUMMER SESSIONS 1957

FALL AND SPRING SEMESTERS 1957–58

A

Aabel, Bruce Collett	D.C.
Aaronson, David Ernest	D.C.
Aaronson, Ethel Aisner	Md.
Abbot, Linda Lou	D.C.
Abbott, Keith Edward	Calif.
Abbott, Nancy	Va.
Abdo, Albert N. B.S. 1953, A.M. 1957, Syracuse University	D.C.
Abdu, Rashid Ali A.B. 1956, Lafayette College	Va.
Abegglen, Carl Edward A.B. 1949, Whitman College	Wash.
Abel, Robert Berger B.S. 1947, Brown University	Md.
Abell, Mary Margaret	D.C.
Abell, Tyler A.B. 1954, Amherst College	D.C.
Abernathy, William Francis	Calif.
Ablard, Charles David B.B.A. 1952, LL.B. 1954, University of Oklahoma	Okla.
Ables, Wendell Peyton B.S. 1954, University of Utah	D.C.
Aboltins, Baiba	N.Y.
Aboltins, Beatrice	N.Y.
Abraham, David B.S. in Phar. 1955, The George Washington University	Md.
Abraham, Phillip Thomas	Ohio
Abrahamsen, John Carl	D.C.
Abrams, Gay E.	D.C.
Abrams, Maurice B.B.A. 1953, College of the City of New York	N.Y.
Abrams, Michael Dee	Md.
Abramson, Marvin	D.C.
Abresch, Peter Eymard	Va.
Achee, Emile Walton B.S. 1949, U. S. Naval Academy	Va.
Acker, Marie Kepp B.S. 1938, Pennsylvania State Teachers College, West Chester	Va.
Ackerman, Barbara Lee	D.C.
Ackerman, Fred Nelson	D.C.
Ackerman, Karl Henry B.S. in C.E. 1933, Tri-State College	Md.
Ackerman, Nancy Barbara	Del.
Ackerman, Reine Marguerite	D.C.
Ackermann, Sue Charlotte B.S. in Ed. 1954, Pennsylvania State Teachers College, East Stroudsburg	N.J.
Acuff, Jean Ann	Va.
Adair, Thomas Hatfield	Va.
Adair, Warren James A.B. 1953, University of Pennsylvania	Pa.
Adam, Patricia Ann	N.Y.
Adamopoulos, Nicolas Constantine	Greece
Adams, Barbara	N.Y.
Adams, Carol Ann	Va.
Adams, Charles Newman	D.C.
Adams, Charles Thomas Roach A.B. 1936, University of Chicago	Ill.
Adams, Diane Maria	Texas
Adams, Dolly	D.C.
Adams, Don Tisherman B.C.E. 1957, University of Florida	Fla.
Adams, Harold Wallace B.S. in E.E. 1954, Purdue University	Va.
Adams, Jody	Va.
Adams, Linwood Herbert B.S. 1950, Morgan State College	D.C.
Adams, Marabeth June	Va.
Adams, Nancy Murphy A.B. 1957, American University	D.C.
Adams, Pauline Tilley	Md.
Adams, Quincy, Jr.	D.C.
Adams, Robert Lewis, Jr.	Va.
Adams, Vilas F.	Colo.
Adams, Virginia Burke	Calif.
Adamson, Ray Power A.B. 1954, The George Washington University	Ga.
Addington, Dennis Earl	Md.
Adelfio, Antonio Jurisprudence 1953, University of Palermo LL.M. 1955, McGill University	Md.
Adelman, Jack Morton B.S. 1954, Ohio State University	Ohio
Adelson, Norman Pershing B.S. 1941, University of Alabama	Va.
Adkins, Bradley Wayne	W.Va.
Adkins, James Alvin B.S. 1930, U. S. Naval Academy	Conn.
Adkins, Lois Winifred B.S. 1945, D. C. Teachers College	D.C.
Adkins, Wendell Lloyd	Md.
Adle, Hormoz B.S. 1955, Davis and Elkins College	Iran
Adler, Helen Claire	D.C.
Adler, Ira Milton B.M.E. 1957, Rensselaer Polytechnic Institute	N.Y.
Adler, Leonard Irwin A.B. 1950, Hunter College	Va.
Adler, Martin A.B. 1956, Harvard University	N.Y.
Adrian, Marie Virginia Ward A.B. 1937, American University B.S. 1941, D. C. Teachers College	Md.
Adsit, Carol Alpha A.B. 1956, Colorado State University	Conn.
Agee, David Milton	Md.
Agel, Mabruk Abuagela	Libya
Agmata, Victor, Jr. Ed.B. 1957, University of Hawaii	Hawaii
Aguado, Christiane	India
Agusiewicz, Henry Anthony B.S. in P.E. 1947, A.M. in Ed. 1949, The George Washington University	Pa.
Aguto, Cezarina Alzona B.S. in Ed. 1953, University of Santo Tomas, Philippines	Md.

Ahalt, Arthur Montraville Md.
B.S. 1931, University of Maryland
M.S. 1937, Pennsylvania State University
Ahalt, Catharine Hauver Md.
A.B. 1932, Hood College
A'Hern, Helen Jean Pa.
Ahlberg, Richard Charles Md.
A.B. 1947, Wesleyan University
A.M. 1948, Columbia University
Aho, John Albert Mont.
Ahrens, Gerd Hans Md.
Aiken, Benjamin Haynes Va.
B.S.E. 1954, Princeton University
Aiken, Felix Randolph D.C.
Aiken, Olivia V. Ala.
B.S. 1955, Alabama State College
Aikens, Agatha Waddill D.C.
B.S. 1941, D. C. Teachers College
Aimo, George Theodore II N.H.
Aivazian, Rosa D.C.
Ajmani, Vinod Kumar D.C.
Akbarian, Mohammed D.C.
Akers, Alan Dayton D.C.
B.S. 1957, University of Kansas
Akhonin, Tatiana D.C.
Akhonin, Vera D.C.
Akkas, Sait Turkey
Alafoginis, Demetra D.C.
Alaniz, Reymundo Texas
Alber, Oleg Edward Va.
B.Ch.E. 1957, Rensselaer Polytechnic Institute
Alberghini, Thomas Joseph Md.
B.S. in Ed. 1943, College of the Holy Cross
B.S. in P.E. 1952, The George Washington University
Albers, James Ray Wash.
B.S. 1956, Washington State College
Albert, Bernard Leon N.J.
B.S. 1954, Franklin and Marshall College
Albert, Howard Md.
Albertson, Susan Lee Ind.
B.S. 1952, Purdue University
Albrecht, Anthony Charles Va.
A.B. 1952, Oberlin College
A.M. 1953, University of Pennsylvania
A.M. 1956, Columbia University
Albrecht, Eugene Henry Ark.
Albright, Andrew Edward Va.
Albright, Clayton Louis, Jr. Md.
B.S. 1954, U. S. Merchant Marine Academy
Albright, John Davis Md.
B.S. in E.E. 1944, M.S. in E.E. 1947, Georgia Institute of Technology
Albrite, Amelia M. Md.
Albrite, James Perez Md.
M.D. 1943, Havana University
Albro, George James, Jr. Md.
Aldama, Hertha S. D.C.
Ph.D. 1934, University of Vienna
B.L.S. 1944, Columbia University
Alderson, Mary Ann Md.
Alderson, Wilbur Stanley Md.
Aldrich, Diane Tremblay D.C.
Aldrich, Patricia Emma D.C.
Aldridge, Frank Lynn D.C.
Ale, James Slate N.J.

Alexander, Aaron David D.C.
B.S. 1938, College of the City of New York
M.S. 1953, The George Washington University
Alexander, Beatina Wilkinson Va.
A.B. 1924, St. Mary's Dominican College
Alexander, Bruce Mitchell D.C.
Alexander, Earl William Ohio
B.S. 1945, U. S. Merchant Marine Academy
Alexander, Howard Newman Wash.
A.B. 1946, University of Washington
A.M. in Ed. 1954, The George Washington University
Alexander, Mary Lougenia D.C.
Alexander, Norman Duncan, Jr. Va.
B.B.A. 1952, LL.B. 1956, University of Oklahoma
Alexander, Olga P. Pa.
Alexander, Richard Leon Ind.
Alexander, Roger Pierre D.C.
Alexander, Thomas Goodwin Va.
B.S. 1950, University of Maryland
Alfers, John Bernard Va.
B.S. 1938, Kansas State College
Alfidi, Marie Pa.
Alford, Alvin Jimmy Miss.
Alford, Josiah Perry Pa.
A.B. 1954, Principia College
Alford, William Curtis Md.
B.S. 1956, M.B.A. 1957, American University
Alfred, Rose Marie D.C.
B.S. in Ed. 1957, D. C. Teachers College
Algee, Roger William Calif.
Alger, LeRoy D.C.
Ali, Abdul Munim A. J. Iraq
A.B. 1951, American University at Beirut
M.B.A. 1954, Stanford University
Alicks, Charles William N.J.
Aljets, Clara Louise Ill.
Alkins, Sheila Eileen N.Y.
Alkire, Kara Diane Md.
Allemano, Irene Prentice Va.
A.B. 1940, Carnegie Institute of Technology
Allemano, Peter Henry Va.
B.S. 1935, Carnegie Institute of Technology
Allen, Albert Conner N.C.
A.B. in Govt. 1956, The George Washington University
Allen, Alleen Strong D.C.
B.Mus. 1937, Oberlin College
Allen, Carolyn Alma D.C.
Allen, David Leon N.Y.
Allen, Diana Lee Va.
A.B. 1956, College of William and Mary
Allen, Dorothy Mack Md.
A.B. 1935, Howard University
Allen, Lida L. D.C.
Allen, Muriel Irene D.C.
Allen, Otto James Texas
Allen, Richard Comfort Va.
A.B. 1951, Knox College
Allen, Robert Kermit Pa.
Allen, Stanley Paul Md.
B.S. 1954, University of Maryland

Allen, William Burke B.I.E. 1956, University of Florida	Fla.
Alley, Richard Hadley, Jr. A.B. 1956, Occidental College	Oreg.
Allgaier, Robert Edward	Va.
Allison, George Eugene	Pa.
Allnutt, Robert Frederick B.S. in I.E. 1957, Virginia Polytechnic Institute	Va.
Allwine, Robert Thomas	D.C.
Al-Mallah, Moyassar Yahia	D.C.
Alofs, Chester B.S. in Eng. 1946, Marquette University	Va.
Alouf, George Anthony B.S. 1953, Virginia Polytechnic Institute	Va.
Alperstein, Joel Berry	Md.
Alpert, Lawrence Jay	D.C.
Alpher, Richard Maleson	D.C.
Al-Samarrie, Ahmad B.S. 1953, University of California	Iraq
Altekruse, Joan Morrissey A.B. 1949, Vassar College	N.Y.
Altenhofel, Dorothy Ann	Ark.
Alter, Burton Norman	Conn.
Alter, David Emmet, Jr. A.B. 1942, College of Wooster A.M. 1950, Mills College of Education	Va.
Altman, Evelyn E.	N.C.
Altman, Nathaniel Norton	D.C.
Altman, Robert Lee B.S. 1957, Westminster College	Md.
Altomare, Philip Martin	Md.
Alvarez, Charles Michael	D.C.
Alvarez, Edith Sherbine	D.C.
Alvarez, Robert Williams	D.C.
Alvig, Olav Henry B.S. 1951, The George Washington University	Va.
Alwan, Abdul Jabbar B.S. 1952, M.B.A. 1954, University of California at Los Angeles	D.C.
Alwan, Joan Heder A.B. 1955, University of California at Los Angeles	D.C.
Amberg, Stanley Louis B.Ch.E. 1956, Rensselaer Polytechnic Institute	D.C.
Ambler, George Chester B.S. 1940, The George Washington University	Va.
Amblod, Donald Theodore	Pa.
Ambrose, Edmund Michael, Jr. B.S. 1955, Fairfield University	Md.
Amdur, Thelma A.B. 1951, Brooklyn College	D.C.
Ames, Barbara Anne	Va.
Ames, David Lyndle	Minn.
Ames, James Proctor	D.C.
Ames, Lawrence Larsen	Va.
Ames, Rachel Aldrich B.S. 1940, Wisconsin State College	Va.
Ames, Richard Galyon	Va.
Amico, Mario Joseph B.S.E. 1954, University of Connecticut	Va.
Amiker, Addison, Jr.	D.C.
Amini, Iradj	Iran
Amstor, Gerald Stanley B.S. 1954, M.S. 1957, Massachusetts Institute of Technology	Va.
Amt, Martin Paul	D.C.
Amtower, Arthur Theodore B.S. 1952, Maryland State Teachers College, Frostburg	Md.
Anand, Davinder Kumar	India
Anderlot, Annette Lou	Va.
Anders, Frank White B.S. in Ch.E. 1942, University of California	Calif.
Andersen, Amanda M.	Mo.
Andersen, Charles Jacob A.B. 1951, Knox College	D.C.
Andersen, Stephen Foss, Jr. B.E.E. 1956, The George Washington University	Md.
Anderson, Alice W. A.B. 1947, A.M. 1952, The George Washington University	D.C.
Anderson, Allan William	Md.
Anderson, Angeline Elizabeth A.B. in Ed. 1941, A.M. in Ed. 1944, The George Washington University	D.C.
Anderson, Arthur James	D.C.
Anderson, Barbara Ann	D.C.
Anderson, Betty Jean	Va.
Anderson, Blanche Arvetta	D.C.
Anderson, Cicely	Va.
Anderson, Clarence Leonard B.S. in M.E. 1955, Pennsylvania State University	Pa.
Anderson, David Carver B.S. 1952, University of Illinois	Fla.
Anderson, David L. A.B. 1954, University of Minnesota	Minn.
Anderson, Don Rawley	D.C.
Anderson, Donald Theodore A.B. 1955, Shepherd State College	W.Va.
Anderson, Douglas LeRoy B.S. 1954, Montana State University	Mont.
Anderson, Ellis Franklin B.S. 1956, University of Maryland	Va.
Anderson, Evan Drexel B.S. 1948, Upsala College	Md.
Anderson, Floyd Edgar B.S. in E.E. 1941, Illinois Institute of Technology	Md.
Anderson, Frances Olive	La.
Anderson, Francis Graham, Jr.	Mass.
Anderson, Frank Charles B.S. 1945, U. S. Coast Guard Academy	Wash.
Anderson, Gene Ray B.S. 1956, Central Missouri State College	Mich.
Anderson, George William, Jr. B.S. 1955, Maryland State Teachers College, Salisbury	Md.
Anderson, Glenn Eric, Jr.	Md.
Anderson, Guinevere F. Wilhite A.B. 1953, Fisk University	Ky.
Anderson, Helen Sybil	D.C.
Anderson, James Edward	Ill.
Anderson, Jan Wood	Va.
Anderson, Jane Louise	D.C.
Anderson, Jean Rice	D.C.
Anderson, Joel Craig	Fla.
Anderson, Kenneth George A.B. 1953, University of North Carolina	N.C.
Anderson, Kenneth Willis B.B.A. 1947, University of Minnesota	Ohio
Anderson, Margaret Elam	D.C.
Anderson, Martha Dunlop B.S. 1954, Virginia State College	D.C.
Anderson, Martin B.S. 1951, M.S. 1954, The George Washington University	Md.
Anderson, Robert Joseph	Va.

Anderson, Roderick Bruce S.D.
B.S. 1957, South Dakota State College
Anderson, Samuel Wentworth D.C.
Anderson, Vernice Va.
Anderson, William Howard D.C.
B.S. 1955, State University of Iowa
Andes, James Hoover Md.
Andreano, Joseph Anthony Md.
Andreano, Lois Ann Md.
Andreu, Jose Cuba
Andrews, Donald Alfred Va.
Andrews, Marvin Roy Va.
B.M.E. 1953, Rensselaer Polytechnic Institute
Andros, Chris Ill.
B.S. in M.E. 1955, Illinois Institute of Technology
Anenson, Joyce Verlaine S.D.
Angeles, Leticia Tabuena Philippines
B.S. in Phar. 1953, University of the Philippines
Angeles, Lilia Javier Philippines
M.D. 1941, University of the Philippines
Angell, Lilyan Carole D.C.
Angelo, Alfred Francis Pa.
B.S. 1954, Pennsylvania State Teachers College, West Chester
Ankers, John Edward D.C.
B.S. in Phar. 1956, The George Washington University
Ankeny, Scott Wayne D.C.
A.B. 1954, University of California
Annand, Richard Jay Va.
Anneser, Robert Eugene D.C.
A.B. 1949, University of Dayton
A.M. 1951, Western Reserve University
M.S. 1956, Ohio University
Annis, E. Gardner Va.
Anson, Roy Stilwell D.C.
Anstine, Lucille Alberta Pa.
B.S. 1956, The George Washington University
Antholis, Ellen Peggy D.C.
Anthony, Harriet Godfrey D.C.
A.B. 1924, Winthrop College
M.S. 1938, University of Pennsylvania
Anthony, Josephine Inabinet D.C.
A.B. 1930, Columbia College, S. C.
Antonelli, Donald Ralph Ill.
B.S. in E.E. 1957, Purdue University
Antonellis, James A. Mass.
Antoniou, Lucy Denise D.C.
Antonopoulos, Bessie D.C.
Antosz, Henry Joseph Md.
Anzelmi, Nicolas Ralph Pa.
Anzelon, George Joseph D.C.
B.M.E. 1941, College of the City of New York
Apanasewicz, Nellie Mary Md.
Apaydin, Meral Turkey
A.B. 1957, Ankara University, Turkey
Apidone, Joseph Michael Md.
B.B.A. 1954, Fenn College
Apostol, Michael M. D.C.
Appel, Jean Slater Va.
A.B. 1928, Vassar College
A.M. 1930, Columbia University
Appel, Ruth Anne D.C.
A.B. 1954, Ohio Wesleyan University
Apperson, Donald D. N.M.
Appich, Thomas Walsh D.C.
Appleman, Geraldine D.C.
Applestein, William Gerson D.C.
A.B. in Govt. 1955, The George Washington University
Appleton, Elizabeth Anne Va.
A.B. 1956, College of the City of New York
April, Stephen Richard D.C.
Apstein, Maurice Md.
B.S. 1932, College of the City of New York
Apter, Ira Va.
B.S. in M.E. 1943, Clarkson College
Apter, Ronald Alan D.C.
Araujo, Cecilia Raposo Mass.
Araujo, Joao Luiz Brazil
Arbena, Joseph Luther D.C.
Ardalan, Manolitchehr Iran
Arena, Marie Rose Mass.
Arey, Anne Elizabeth D.C.
A.B. 1957, University of Pennsylvania
Arey, Herbert Littleton D.C.
B.M.E. 1949, North Carolina State College
Argent, Russell Henry D.C.
A.B. 1952, Washington Missionary College
Argerakis, George Peter D.C.
Argyropoulos, Dimitrios Archimedes Greece
A.B. 1957, The George Washington University
Argyropoulos, May Paulette D.C.
Arillo, Vincent Lawrence Md.
Arista, Henry Pa.
Armstrong, Annie Gail N.C.
Armstrong, George Duff D.C.
A.B. 1950, University of Pittsburgh
Armstrong, James Harvey Mass.
A.B. 1953, Ed.M. 1955, Boston College
Armstrong, Jasper Henderson, Jr. Md.
B.S. 1952, University of Maryland
Armstrong, Lilian Pa.
Armstrong, Sam Gordon Texas
B.B.A. 1948, University of Texas
Armstrong, Robert Donald N.Y.
B.S. in M.E. 1955, University of Colorado
Arnald, Rosalie Bryant Md.
Arndt, Edward J. Va.
A.M. 1932, Washington University
Arni, Helen Odd Va.
A.B. 1938, University of Utah
Arnold, David Raleigh Va.
Arnold, Donald James Md.
B.S. 1951, Lebanon Valley College
Arnold, Dorothea Mich.
B.P.H.N. 1950, University of Michigan
Arnold, Gretchen Louise D.C.
Arnold, Herbert Wayne Md.
Arnold, Joe E. D.C.
Aronne, Eugene Louis Md.
B.C.E. 1951, Catholic University of America
Aronoff, Mervyn Ira D.C.
Aronoff, Terese Carole D.C.
Aronson, Milton Louis Md.
Aronson, Raphael Samuel Pa.
B.S. in M.E. 1955, Lehigh University
M.S. in M.E. 1956, Purdue University
Arshawsky, Frank Md.
Arthur, Jack Allen Va.
Arthur, Robert Sidney Va.

Artrip, Betty Lou Va.
B.S. 1954, Rensselaer Polytechnic Institute
Arunrangsi, Ambhorn Thailand
B.Com. 1950, University of Bangkok
Arzuaga, Margarita D.C.
A.B. in Ed. 1952, University of Puerto Rico
Aserkoff, Bernard Ralph Md.
Ash, Ann Louise Ala.
Ash, Susan D.C.
Ashby, Warren Delaplane D.C.
Ashe, Warren Kelly D.C.
B.S. 1951, Howard University
Ashley, Gordon Shaw Md.
B.S. 1927, U. S. Naval Academy
Ashmore, Betty Ann Md.
Ashton, Mary Ann Va.
B.S. in Ed. 1953, Madison College
Askew, Laurin Bryan D.C.
B.S. 1946, Georgetown University
Aspiotis, Spyridon Alexander Va.
Astor, Sanford D.C.
B.S. in C.E. 1958, Purdue University
Astrup, Jens Leo N.D.
B.S. 1956, North Dakota State College
Atchisson, Charles David Mo.
A.B. 1950, University of Missouri
Atkin, Sidney Thomas Md.
Atkins, Alice Maye D.C.
Atkins, Ann Marthina Va.
Atkins, John Dillard, Jr. Va.
B.S. 1940, North Carolina State College
A.M. in Ed. 1949, The George Washington University
Atkinson, Aubrey Eldridge Va.
Atkinson, Robert Wharton Va.
A.B. 1952, Haverford College
Atlas, Dean Niyazi Md.
A.B. 1957, The George Washington University
Atwater, Edward Crump D.C.
Atwell, Belton Goodman Fla.
Atwood, Roger Morris Minn.
A.B. 1957, Carleton College
Aubuchow, Frank David Mo.
B.S. in M.E. 1957, University of Missouri
Audia, William Vincent D.C.
B.S. 1955, The George Washington University
Auerbach, Ernest Sigmund Md.
Auerbach, Hannah Helene Va.
Auerback, Mara Traylor D.C.
Ausbeck, Paul James Va.
B.S. in Met.Eng. 1952, Purdue University
Auslaender, Jakob Md.
B.S. 1956, Massachusetts Institute of Technology
Ausman, William Haywood D.C.
Auster, Michael, Jr. Ill.
Austerlitz, Carl Frederick D.C.
Austin, Anne Mary D.C.
Austin, Claude Bo Tenn.
Austin, Edwin Cogswell Va.
Austin, George Kenneth Md.
A.B. 1956, The George Washington University
Austin, J. Dean Md.
B.S. 1947, M.S. 1948, University of Pittsburgh
Austin, Nancy Alden Va.
Auth, Bertha Catherine Md.
Avellar, Karl Brecc Mass.
Avery, Anthony Parke Va.
Axtell, George Clifton Va.
LL.B. 1952, A.M. (C.G.S.) 1957, The George Washington University
Ayers, Reginald Lee Md.
Aylaian, Arsen D.C.
Aylward, Judith Acken Va.
A.B. 1954, Wellesley College
Ayoroa, Gaston Enrique D.C.
Ayotte, Dorothy A. Mass.
Ayres, Horace Travis Va.
B.S. 1937, Virginia Polytechnic Institute
Azerbeygui, Fereydoun D.C.

B

Baba, Anthony John Pa.
B.S. 1957, Georgetown University
Babin, David Stuart N.Y.
A.B. 1956, Harvard University
Babington, Wallace D.C.
A.B. 1946, Centenary College
B.D. 1950, Duke University
Babione, William Peter Va.
Babst, Edward Ralph Md.
Bac, Nurettin Turkey
B.S. 1945, University of Istanbul, Turkey
Bachman, John David Md.
Bachmayer, Katherine Annette S.D.
Back, William Va.
A.B. 1948, University of Illinois
M.S. 1955, University of California
M.P.A. 1956, Harvard University
Backus, Edith Gisela D.C.
Backus, Olga D.C.
B.S. 1957, New York State Teachers College, Fredonia
Baczynsky, Tamara D.C.
Baden, Douglas Joseph Va.
Bader, Marvin Roy D.C.
Bader, William Andrew N.Y.
A.B. 1957, Duke University
Badoud, Gary David D.C.
Baechler, Donald O. Ill.
Baer, Howard Samuel Conn.
A.B. 1957, Wesleyan University
Baffa, Ruth E. N.Y.
Bagan, Michael N.Y.
Bagby, Barbara Wade Va.
Baggett, Ann McCarrell S.C.
Baggett, Joyce Marilynn Va.
Baggott, William Keeffe W.Va.
B.S. in I.E. 1957, West Virginia University
Bagnell, Thomas John, Jr. Pa.
B.S. 1955, LaSalle College
Bagramian, Argine Jean Va.
Bagwell, Effie Lou Va.
B.S. in Ed. 1928, Georgia State College for Women, Milledgeville
Baharoff, Dimitri Stancho D.C.
Bahjat, Khalid Said Iraq
B.S. 1952, College of Chemistry, Iraq
M.S. 1955, University of Maryland
Bahr, Clarence Leo, Jr. Va.
Bailer, John Ross D.C.
Bailey, Aubrey William D.C.
Bailey, Barbara Anne D.C.
Bailey, Carol Culbert D.C.
Bailey, Elizabeth Corinne Md.
Bailey, Ellen Lorraine Md.

Bailey, James Edward W.Va.
Bailey, John Herbert D.C.
  B.S. 1957, University of Maryland
Bailey, Kenneth Holmes, Jr. D.C.
Bailey, Marian Lucille D.C.
Bailey, Nancy Hamilton D.C.
  B.S. in Ed. 1946, West Virginia University
  A.M. in Ed. 1953, The George Washington University
Bailey, Richard Hinton Ohio
Baillos, Donald Paul D.C.
  A.B. 1952, Michigan State University of Agriculture and Applied Sciences
Bain, Clara Marie D.C.
Bain, James, Jr. Va.
  B.S. 1950, Massachusetts Institute of Technology
  M.B.A. 1957, Syracuse University
Bair, Phillip Gordon Md.
Baird, William David Okla.
Baity, Richard Bernard Pa.
  B.S. 1949, Pennsylvania State Teachers College, Mansfield
Bajandas, Mario Enrique D.C.
  B.M.E. 1950, Catholic University of America
Baka, George Leslie Va.
  B.F.A. 1956, Pratt Institute
Baker, Albert Cannon Va.
  A.B. in Govt. 1957, The George Washington University
Baker, Arnold Stephen, Jr. Maine
  A.B. 1956, University of Minnesota
Baker, Benjamin Harrison Md.
  B.S. 1953, University of Maryland
Baker, Carol Lee Va.
Baker, Clyde Hopper Md.
Baker, Donald Rigdon Calif.
Baker, Elsie Elizabeth Calif.
Baker, Harold Leon Tenn.
Baker, Henry Godsoe, Jr. Md.
Baker, Johnnie Carson Va.
Baker, Joseph O. Utah
Baker, Marian Netti Va.
Baker, Marilyn R.I.
Baker, Michael Steven D.C.
Baker, Morley W., Jr. Pa.
  A.B. 1952, Washington and Jefferson College
Baker, Pearl Anita Minn.
Baker, Raymond Nicholas D.C.
  B.S. 1946, U. S. Naval Academy
Baker, Robert Edward D.C.
  B.S. in Ed. 1939, New York State Teachers College, Buffalo
  A.M. 1954, Catholic University of America
  A.M. in Ed. 1956, The George Washington University
Baker, Robert Ellerson Francis D.C.
Baker, Robert Saxon Okla.
Baker, Roger William Va.
  B.S. 1948, Duquesne University
Baker, Stuart Eddy D.C.
Baker, Virginia May Va.
  B.S. 1938, Bates College
Baker, Waldon Lee Va.
Baker, William Clinton D.C.
  A.B. 1949, A.M. 1950, The George Washington University
Bakke, Jean Calif.
Bakker, Sybe Kornelis Md.

Balch, John Nelson, Jr. Md.
Baldauf, Barbara Ann Va.
Baldauf, Janice Ruth Va.
Baldauf, Laurence Charles Pa.
  B.S. 1929, U. S. Naval Academy
Baldauf, Phillip Dayle Va.
  B.S. 1956, Principia College
Baldwin, Bernell Elwyn Md.
  A.B. 1956, Washington Missionary College
Baldwin, Brian Jay Md.
Baldwin, Donald Va.
Baldwin, Helene Louise Md.
  A.B. 1941, McGill University
Baldwin, Mary Eyre D.C.
  A.B. 1950, Vassar College
Baldwin, Oscar Franklin Fla.
  A.B. 1952, University of Florida
Balent, Alexander J. Va.
  B.S. in B.A. 1951, University of Pittsburgh
Balentine, William Robert Md.
Balgie, Patricia Jane Md.
Balgie, Thomas Robert Md.
Ball, Charles Emmet Md.
  B.S. 1949, The George Washington University
Ball, Douglas Bleakly D.C.
Ballard, Edward James D.C.
  B.S. in E.E. 1954, Syracuse University
  M.S. in E.E. 1956, Stanford University
Ballard, Jennings Fletcher Md.
  A.B. 1942, East Carolina College
  A.M. 1947, Columbia University
Ballard, Leo D.C.
Ballard, Mack Neal, Jr. N.C.
  B.S. 1956, Presbyterian College
Ballenger, Anita Rose Va.
Ballentine, Douglass Kelley Texas
  A.B. 1937, Texas Western College
Ballinger, Willis Jerome D.C.
  Ph.B. 1923, Yale Unievrsity
Balodemas, Chris D.C.
Balser, Donald Raymond Ind.
  A.B. 1955, Indiana University
Baltimore, Charles H. D.C.
  A.B. 1932, Howard University
  A.M. 1940, New York University
Balukevich, James Joseph N.H.
Bambach, Richard Karl D.C.
Ban, Dinh Van D.C.
Bancker, Diana Va.
Bancroft, Frederic Walcott, Jr. Va.
  A.B. 1950, Princeton University
Banczyk, Andrew Gregory Md.
Bandy, Alva Harlan Kans.
  B.S. in C.E. 1947, Kansas State College of Agriculture and Applied Science
  LL.B. 1949, Washburn Municipal University
  LL.M. 1951, The George Washington University
Banfield, William Landon Md.
  A.B. 1954, Princeton University
Banick, John Albert Va.
Banigan, Barbara Gavin Va.
Banks, Arthur Sparrow D.C.
  A.B. 1951, Cornell University
  A.M. 1954, The George Washington University
Banks, Gary Frank Va.
Banks, Nettie Nash D.C.
  B.S. 1940, Bennett College
  A.M. 1948, Columbia University

Banks, Virginius Hobson, Jr. Va.
Bannon, Robert William Va.
Banta, Joseph Harry, Jr. D.C.
Banville, Robert Raoul Va.
Bao, You Yu China
A.B. 1948, National Chinese University, China
Bara, Zygmund John Md.
B.S. in E.E. 1949, University of Rochester
Barab, John David, Jr. N.J.
A.B. 1955, University of North Carolina
M.S. 1957, Michigan State University
Baraff, Bertram Jay D.C.
Barakat, Ismail Abdel-Megrid Egypt
Barb, Howard Nicholas W.Va.
B.S. 1954, Davis and Elkins College
Barber, LaZelle Cooper Md.
B.S. 1942, East Texas State Teachers College
Barber, Lewis Fla.
Barber, Wilfred Earl Va.
Barberi, Anthony Louis Calif.
Barbiere, Robert James Pa.
Barbosa, Jose Carlos D. Brazil
Barbot, Cecile Marie D.C.
Barbot, Noel Charles Md.
Barcay, Caroline Theresa Va.
Barcus, Paul Walden D.C.
B.S. 1945, U. S. Naval Academy
B.S. 1948, Massachusetts Institute of Technology
Barden, Arlene S. Va.
Barfoot, Charles Bernard Ala.
B.S. 1955, Tulane University
Bargh, Pickard Fowler Va.
B.E.E. 1953, The George Washington University
Barham, Thomas William Va.
B.S. 1953, Virginia Polytechnic Institute
Barkanic, Michael George Pa.
Barker, Charles Robert, Jr. Va.
Barkin, Robert Allan D.C.
Barksdale, Ronald Stanford Ga.
B.I.M. 1953, Alabama Polytechnic Institute
Barley, Warren Esch D.C.
Barlow, Jacqueline Lee D.C.
Barlow, Shirley Mass.
Barman, Leon D.C.
Barnack, Robert Francis Pa.
Barnes, Judith Gayle S.D.
Barnes, Laurence Almon, Jr. Va.
Barnes, Margaret Jean Va.
Barnes, Margie Williamson D.C.
Barnes, Raymond VanDyck Md.
Barnes, Robert Greeley D.C.
B.S. 1953, U. S. Naval Academy
Barnes, Thomas Joseph D.C.
Barnes, Thomas Joseph Minn.
A.B. 1950, A.M. 1951, University of Minnesota
Barnes, Thomas Owens Tenn.
Barnett, Edward Samuel Minn.
A.B. 1938, Gustavus Adolphus College
Barnhard, Charles Lee D.C.
Barnhart, Clarence Paul Md.
A.B. 1930, Lebanon Valley College
Ed.M. 1943, University of Maryland
Barnhart, Robert Miller Md.
Barnhill, James Edward Ga.
B.S. in T.E. 1938, Georgia Institute of Technology

Barnstone, Raymond S. Md.
B.S. 1946, Brown University
M.S. 1948, Massachusetts Institute of Technology
Baroff, James H. Md.
Baron, Melvin Aaron D.C.
Baroody, Theodore Joseph Va.
Barr, Arnold Benjamin D.C.
A.B. 1956, The George Washington University
Barr, Helen Sagmaster Ohio
Barr, Joyce Lynne D.C.
Barr, Mason, Jr. D.C.
A.B. 1957, Haverford College
Barr, Robert Sutherland Mass.
B.S. 1952, Louisiana Institute of Technology
Barrett, John William Pa.
Barrett, Marcia D.C.
Barrett, Peter Md.
B.S. 1953, University of Pennsylvania
J.D. 1956, Northwestern University
Barrett, William P. Calif.
A.B. 1955, University of California at Los Angeles
Barrick, Donald Michael Md.
Barrier, Alberta D.C.
Barrier, Raymond Calif.
A.B. 1952, University of California
Barrow, Allen Rogers, Jr. Maine
A.B. 1947, Dartmouth College
Ed.M. 1949, Boston University
Barrow, Bedie Beth D.C.
Barrow, Wylie Winfield, Jr. Md.
Barrows, John Fries N.Y.
A.B. 1952, Allegheny College
M.P.A. 1953, Syracuse University
Barrs, Jewell Claudette S.C.
Barry, Francis Gordon Md.
B.E. 1949, Johns Hopkins University
Barry, Margaret Elizabeth Va.
Barry, Robert Keigan Md.
Barsky, Harvey D.C.
Barta, Reginald D. Va.
Bartels, Shirley Ann D.C.
Bartelt, Katherine C. Va.
B.S. 1933, D. C. Teachers College
Barteluce, John Joseph N.J.
Bartko, Marcia Colette Md.
Bartkowski, Florence Ohio
Bartlett, Edward A. Md.
B.B.A. 1929, Ed.M. 1941, Boston University
Bartlett, Fred Rex Md.
B.S. in M.E. 1951, West Virginia University
Bartlett, Harwood Ga.
B.S. 1956, Georgia Institute of Technology
Bartlett, Victor A., Jr. Md.
Bartley, Herbert Allen N.C.
Bartley, Hugh James Va.
B.S. 1947, U. S. Military Academy
M.B.A. 1956, Syracuse University
Bartolini, Julian A. Md.
A.B. 1951, University of Maryland
Barton, Alan Brent Calif.
A.B. 1955, University of California at Los Angeles
Barton, Hope Campbell Va.
Barton, Margaret Balian Va.
Barton, Norman Wis.
B.S. 1957, University of Wisconsin

Barton, Olivia Susan	Va.
Barton, Robert Bruce	Va.
Barton, Sara Ellen	D.C.
Bartone, John Norman	D.C.
B.S. 1954, Western Reserve University	
Bartoo, Fanita Lytle	D.C.
Bartow, Pierrepont Francis	N.J.
B.S. in C.E. 1947, The Citadel	
Bartz, Mary Anna	Va.
B.S. 1955, University of Wisconsin	
Bartzoff, Burton	Mass.
B.S. 1955, Boston University	
Barwick, Atwood Sinclair	Md.
Basedow, Henry James	D.C.
B.S. 1957, University of Missouri	
Bash, Howard Orr	Ind.
Basham, William Randolph	Va.
Bashor, Dorothea Stearns	D.C.
Basile, Anthony Stephen	Md.
Bass, Earl Jay	Md.
A.B. 1950, Catholic University of America	
Bass, Jerome Stuart	N.J.
Bass, Robert Hugh	D.C.
A.B. 1951, Wiley College	
Bassett, Mary Elizabeth	Va.
Bassett, Richard Charles	Pa.
A.B. 1957, University of Pittsburgh	
Bassett, Victor Habieb	Va.
A.B. 1948, Ohio State University	
Bassett, William Brewster	N.Y.
A.B. 1955, Dartmouth College	
Bassuener, Helen Ann	Va.
Bastianello, Raymond	Va.
Batchlor, Elaine Knight	D.C.
Bates, Adelaide Ella	N.Y.
Bates, Alice	D.C.
Batson, Thomas Charles	Md.
B.Mus. 1951, Butler University	
Battan, John Arthur	Md.
B.S. 1955, New York University	
Battey, Philip Everett	Va.
Battison, Margaret Cicely	Md.
A.B. 1942, A.M. 1945, Wellesley College	
Battle, B. Jean	D.C.
Battle, Jasper Cornelious	N.C.
Battle, Walter R.	D.C.
B.S. 1952, D. C. Teachers College	
Battles, James Whitlock	Md.
Bauer, Arthur William, Jr.	Nev.
Bauer, Richard	D.C.
Baugh, Marvin Hamilton	D.C.
B.S. 1947, Texas Christian University	
Baugh, Vida Marie	Idaho
A.B. 1950, University of Idaho	
Baughman, Melvin Earle	Kans.
B.S. 1956, Kansas State College of Agriculture and Applied Science	
Baum, Edith Carter	Md.
A.B. 1955, Western Maryland College	
Baum, Vincent Charles	D.C.
Bauman, Arthur Michael	D.C.
Bauman, Barbara Ann	D.C.
B.S. 1953, University of Wisconsin	
Baumann, Evelyn Marie	D.C.
Baumann, Walter Lawrence	D.C.
A.B. 1956, The George Washington University	
Baumgardner, Elizabeth Ann	Va.
Bausch, James Zimmerman	D.C.
Baute, Eloise Dorothy	Mo.
Bawer, Robert	Va.
B.E.E. 1947, University of Florida	
M.S. in E.E. 1949, Massachusetts Institute of Technology	
Baxter, Allin Preston	D.C.
A.B. 1952, University of Virginia	
Bayar, Belma	Turkey
M. of Law 1954, University of Istanbul, Turkey	
Bayer, Donald Mark	Va.
Bayer, Frederick Merkle	Fla.
B.S. 1948, University of Miami	
M.S. 1954, The George Washington University	
Bayes, Harold Eugene	D.C.
Baylies, Sofrona Fielding	D.C.
Bayne, Marmaduke Gresham	Va.
A.B. 1942, University of Tennessee	
Baza, Antonio Herrero	Guam
A.B. 1958, Catholic University of America	
Beach, Donald Francis	D.C.
Beach, George Benton	Va.
Beach, Sandra	D.C.
Beahm, Clyde Weldon	D.C.
Beal, Williams	Mass.
A.B. 1946, Antioch College	
A.M. 1956, Yale University	
Beale, David Anthony	Va.
Beale, George William	Va.
A.B. 1949, The Citadel	
Beale, Rebecca Timberlake	Md.
A.B. 1939, College of William and Mary	
Beale, Thomas Preston	D.C.
B.S. 1950, West Virginia State College	
Bealle, Nancy Blandford	D.C.
Bean, David Emerson	Utah
B.S. 1954, University of Utah	
Bean, John Joseph	Va.
B.S. 1950, College of Charleston	
Beard, Richard Myron	Md.
Beard, William Henry	D.C.
B.S. 1953, Georgetown University	
Beary, Alexander David, Jr.	Md.
B.E.E. 1948, Manhattan College	
Beath, Phoebe Carter	D.C.
A.B. 1942, Eastern Kentucky State College	
Beatman, James Winfield	Va.
A.B. 1948, Oberlin College	
A.M. 1950, University of Pennsylvania	
Beaton, Robert John	D.C.
B.S. 1942, University of Maine	
Beatty, Bruce Lee	Md.
Beatty, Elizabeth P.	Va.
Beatty, Ronald H.	Conn.
B.S. 1954, Fairfield University	
Beaty, Orren, Jr.	Ariz.
A.B. 1940, New Mexico College of Agriculture and Mechanic Arts	
Beauchamp, George Emerson, Jr.	Ill.
A.B. 1952, Shimer College	
Beaudoin, Claude Leo	Md.
B.S. 1956, University of New Hampshire	
Beaudry, Viola Martine	D.C.
Beaumont, Charles David III	Md.
B.S. 1953, University of Wisconsin	
Beaver, John Melton	Calif.
Becherer, Charles Jerome	Va.
Bechtel, Gene Arlan	Kans.
B.S. 1954, McPherson College	
Bechtold, Donald William	Pa.
Bechtoldt, Janet Marie	Md.
B.S. 1956, University of Maryland	
Beck, Henry Donald	D.C.
Becken, Gaynelle Marguerite	Md.
Becker, Brian Lester	D.C.
Becker, Doris Jean	Pa.

Becker, Earl Franklin, Jr. Md.
B.S. 1951, Muhlenburg College
Becker, Judith Lee D.C.
Becker, Margaret Ann D.C.
A.B. 1955, Dunbarton College
Becker, Miriam Judith D.C.
Becker, Roland Wayne Ind.
Beckett, Richard Robinson Md.
Beckley, Daniel Webster, Jr. N.J.
Beckman, Elaine Bonnie D.C.
Beckner, Frederick Schroeder D.C.
A.B. 1953, Antioch College
Beckwith, Horace Palmer N.J.
A.B. 1954, Maryville College
Beckwith, Irene Marlow D.C.
Beckwith, John Quintus Va.
Beckwith, Marion Casey Md.
A.B. 1948, Rhode Island School of
Education
A.M. in Ed. 1951, The George
Washington University
Beczkiewicz, Thomas John D.C.
Bedford, Dolores Nancy Md.
Beechy, Thomas Howard D.C.
Beeman, John Albert Calif.
Beemer, William Frederick Va.
A.B. 1952, Ursinus College
A.M. 1953, Clark University
Beers, Beverly Anne Va.
Beers, James Richard Md.
Beers, John Frank Md.
Befacchia, Mary Christoph D.C.
Begelman, Joan Barbara Va.
Begelman, Phyllis Va.
Behart, Yvonne Huguette Md.
License es lettres 1949, University of
Bordeaux, France
Behnke, Edward August Va.
Behrens, Howard Chester Md.
Behrens, Loran William Iowa
Behrens, Nicklas Theodore Md.
Behrmann, Stanford Alan Md.
Beisel, Edward Lincoln Mo.
Beiser, Joel D.C.
Beitton, Joanne Louise Va.
Beitzell, William Benjamin Va.
Bekker, Sarah McInteer D.C.
A.B. 1944, University of Kentucky
A.M. 1946, University of Minnesota
Bele, Sally Ann D.C.
Belechak, Elizabeth Catherine D.C.
Belfield, Stuart Curry, Jr. D.C.
Belford, William Beeber Va.
Belinsky, Samuel Michael Va.
A.B. 1955, University of Bridgeport
Bell, Asael Evan Va.
B.S. in E.E. 1956, University of
California
Bell, Barbara Ann Md.
Bell, Charles Md.
Bell, Clyde Laurance, Jr. D.C.
Bell, Dixie Lee Okla.
Bell, Forrest Horatio Va.
Bell, Frances Geneva Va.
Bell, Francis Hugh Va.
Bell, Gregory McCaleb, Jr. Md.
B.S. 1948, U. S. Naval Academy
Bell, Harry Clark N.Y.
B.S. 1957, Georgetown University
Bell, Ivan Francis Va.
B.S. in M.E. 1949, The George
Washington University

Bell, James Carleton, Jr. Md.
A.B. 1941, Harvard University
Bell, John Lance Va.
Bell, Mary Ann Va.
Bell, Minneola Bailey S.C.
A.B. 1922, University of Mississippi
A.M. 1950, University of Florida
Bell, Robert Alexander Va.
Bell, Robert Fowler Va.
A.B. 1956, University of North Carolina
Bell, Robert William Va.
Bell, Roger Forrest Md.
Bell, Thomas Graham Nev.
B.S. in B.A. 1950, University of Nevada
Bell, Virginia Ferris D.C.
B.S. 1952, D. C. Teachers College
A.M. 1955, New York University
Beller, Margaret Anne Md.
A.B. 1955, A.M. in Ed. 1957, The
George Washington University
Bellet, Michael N.J.
Belmont, William Robert D.C.
A.B. 1952, De Paul University
A.M. 1954, The George Washington
University
Belotti, John Charles Va.
Belt, Isabel Parker D.C.
B.S. 1938, D. C. Teachers College
A.M. 1956, New York University
Belt, Lloyd Kenneth Va.
A.B. 1952, A.M. 1953, The George
Washington University
Beltran, Howard Va.
B.S. in C.E. 1956, Purdue University
Beltran, Ruben Quinto Philippines
B.S. 1950, Far Eastern University
Benatti, Silvio Benedict D.C.
Bender, Anne Stetson Va.
A.B. 1954, Westminster College
Benedict, Ella Mabel Va.
Benelli, Michael Daniel N.Y.
Benhmida, Mohamed Taha Tunisia
Benincase, Carl N.J.
Benit, Henry Junior La.
Benitez, Enrique Ney Panama
A.B. 1957, University of Panama
Benjamin, Charles Wallace D.C.
A.B. 1951, Syracuse University
Bennett, Arthur Martin Md.
B.E.E. 1957, Rensselaer Polytechnic
Institute
Bennett, Barbara Helen Va.
B.S. in Ed. 1955, Madison College
Bennett, Daniel Arthur Pa.
M.E. 1929, Stevens Institute of
Technology
LL.B. 1934, J.S.D. 1936, Brooklyn
Law School
LL.B. 1937, Dallas School of Law
Bennett, Elizabeth Ann Va.
B.S. 1953, University of North Carolina
Bennett, Frank William Md.
B.E. 1948, Yale University
Bennett, Gayle Moran Iowa
B.S. 1957, University of Maryland
Bennett, James Charles Va.
B.S. 1937, U. S. Naval Academy
Bennett, Janice Carol Md.
Bennett, Loretta May D.C.
Bennett, Milton Kelly D.C.
Bennett, Roland Keener Md.
Bennett, Sara Galor Va.
A.B. 1955, University of North Carolina

Bennett, Walter Dennis Va.
Bennett, Walter Wilson Wyo.
B.S. 1955, University of Maryland
Benson, David Va.
Benson, Reed Amussen D.C.
B.S. 1953, Brigham Young University
Benson, Sylvia Jane Ind.
Benson, Virginia Noel D.C.
Benson, Wilbur Earle Va.
A.B. 1951, M.B.A. 1952, The George Washington University
Bent, Kirke McAdam D.C.
Benton, Gaylord Nelson Kans.
B.S. 1952, A.M. 1953, University of Kansas
Benton, Lee Lemmon, Jr. Va.
Bentz, Elizabeth Ann Pa.
Benevenuto, Carl Joseph D.C.
Berberich, Joan Frances Va.
Bercowitz, Michael Robert D.C.
Berdo, Robert Henry D.C.
B.S. 1956, State University of Iowa
Berens, Donald Frank Ohio
Beresford, Spencer Moxon D.C.
B.S. 1939, LL.B. 1942, Harvard University
Berg, Morton D.C.
Bergem, Harold Theodore Wash.
Berger, Calvin M. Mass.
A.B. 1956, Williams College
Berger, Carl Va.
A.B. 1949, University of Iowa
A.M. 1952, Drake University
Berger, Florence Bernice Ill.
A.B. 1952, The George Washington University
Berger, Howard Stafford, Jr. Va.
Berger, Philip Kenneth Fla.
Berger, Stanley Elliott D.C.
Bergera, Jerald James Utah
Bergeron, Paul Richard II Md.
Bergey, Milton George D.C.
Bergin, Francis Joseph N.Y.
Bergin, Helen Marie Md.
Bergquist, Linda Elizabeth D.C.
Berke, Jerrold Ira D.C.
B.B.A. 1955, College of the City of New York
Berkley, Anne Louise Md.
Berkman, Esther Jane D.C.
Berkowitz, Melvin Md.
B.C.E. 1948, College of the City of New York
Berlage, Bruce Ladd Md.
B.S. 1956, University of Maryland
Berlin, Arnold Md.
Berlin, Helen Joanna Md.
Berliner, Hans Jack D.C.
A.B. 1954, The George Washington University
Berman, Beverly Joyce N.J.
Berman, Richard Gordon Md.
B.S. 1955, University of Maryland
Berman, Robert Stuart Va.
Berman, Valerie Louise N.J.
Bermeosolo, Francisco Gimenez Spain
Bermudez, Ana Ines Puerto Rico
Bernard, Fred Wayne Va.
B.S. 1950, University of Tennessee
Bernard, Hugh Yancey, Jr. Va.
A.B. 1941, University of Georgia
B.S. 1947, Columbia University
Bernasconi, Dean Drake Mass.
Berndt, Gerald Darwin Va.
A.B. 1948, University of Minnesota
M.S. 1951, New York University
Bernet, Howard Calender N.Y.
Bernheisel, Bertha McCaslin D.C.
B.S. 1931, Harris Teachers College, Missouri
Bernheisel, David Hall D.C.
Bernheisel, John Franklin Maine
Bernheisel, William Franklin D.C.
Bernkopf, Walter Charles Va.
B.S. in E.E. 1949, University of Denver
Bernstein, Alan Herbert Pa.
B.S. in Ch.E. 1955, Drexel Institute of Technology
Bernstein, Jerome Seymour D.C.
A.B. 1957, The George Washington University
Bernstein, Judith Pa.
Bernstein, Lois Ann Md.
Bernstein, Philip Aaron D.C.
Bernstein, Ronald Va.
Bernstein, Saul Henry D.C.
B.S.E. 1957, University of Maryland
Bernstone, Daniel Lazarus N.J.
B.S. 1957, New York University
Bernthal, Robert Max D.C.
Berry, Charles White, Jr. D.C.
B.S. 1930, New York University
Berry, Estelle Davis Va.
Berry, Kathleen Major Calif.
Berry, Richard Marshall Va.
A.B. in Govt. 1957, The George Washington University
Berry, Robert Alden Md.
Berry, Walter Homer Md.
Berry, William John Va.
Berry, William Willis Va.
B.S. in E.E. 1954, Virginia Military Institute
Berteling, John Burke Va.
B.S. in Ch.E. 1938, Notre Dame University
Bertman, Martin Isaac N.J.
Bertram, Frieda Sturm Va.
A.B. in Ed. 1953, A.M. in Ed. 1957, The George Washington University
Bertsch, Dale Roger Va.
Berul, Lawrence Herbert N.J.
B.S. 1957, Drexel Institute of Technology
Berulis, Martha M. D.C.
Berumen, Robert Joseph Calif.
Bess, Lorraine Jeffries D.C.
B.S. 1956, D. C. Teachers College
Besser, Charles Alfred, Jr. Md.
Best, Guy A. Md.
B.S. 1944, U. S. Naval Academy
Best, Stephen Lewis D.C.
A.B. 1955, Kenyon College
Betancourt, Rachel Adele D.C.
Betensky, Mala D.C.
M.S. 1944, New School for Social Research, N. Y.
Beter, Peter David W.Va.
A.B. 1947, West Virginia University
LL.B. 1951, National University
Bethea, Monroe Lecile Ark.
Bethel, Edward Volen D.C.
Bethke, Sue Ann Va.
A.B. 1957, Piedmont College
Betsill, Richard Wilson Va.
Betsock, Thomas E. D.C.

Bettwy, David Strayer Va.
Beury, George Price Md.
A.B. 1954, Centre College
Beutler, Ernest Albert, Jr. Wis.
B.S. in M.E. 1956, Northwestern University
Beuttenmuller, Richard Albert Md.
B.S. 1953, College of the City of New York
Bevan, Betty Ruth N.J.
Bevis, Kathryn Kidd D.C.
B.S. 1954, Ball State Teachers College, Indiana
Beyda, Cohen Richard D.C.
Beyer, John Robert D.C.
Bezak, George S. D.C.
Bianchini, William Robert Md.
Bias, Shirley Ann D.C.
Bibby, William Lawrence Va.
B.S. 1943, U. S. Military Academy
Bickerton, George Edward D.C.
Bickford, Frederick H. C., Jr. Va.
B.S. in E.E. 1952, University of Denver
Biddle, Doris Jean D.C.
Biddle, Lorraine Arbutus Va.
B.S. in H.E. 1952, Ohio University
Bidel, Badiehzaman D.C.
A.B. 1945, D. C. Teachers College
Biederman, Kenneth Harold Mich.
Bielanowski, Walter Mitchel N.J.
A.B. 1955, LaFayette College
Bienenstock, Roslyn Doris N.Y.
Bierer, George Jackson Va.
B.S. in E.E. 1957, University of Pittsburgh
Bierly, Robert Foust Va.
A.B. 1943, University of Maryland
Bierwagen, Ronald Walter Md.
Biesel, David Barrie Md.
Bietz, Mona Lee Va.
Bigelow, Henry Waite Md.
B.S.E. 1930, Tufts University
Bigelow, John Williams D.C.
Biggane, Helen Calif.
Bigger, Warner Thomas D.C.
B.S. in Ch.E. 1939, University of Florida
A.M. 1950, Stanford University
Bilecky, Adam D.C.
A.B. 1948, B.S. 1955, Ohio State University
Biles, Alice Henderson D.C.
A.B. 1945, Johnson C. Smith University
Billard, Jacqueline Md.
A.B. 1933, Goucher College
Billings, Millard Francis Va.
A.B. 1930, University of California
Billis, Angelos Vasilios D.C.
LL.B. 1955, University of Salonika, Greece
Bills, Dorothy Jane Md.
A.B. 1944, Western Maryland College
Bilmanis, Ceronis Md.
Bilmanis, Milda Md.
Bilodeau, Joseph Ronald N.Y.
Bilodeau, Paul Ernest Maine
Bindemanis, Edgars Leopolds Md.
Binford, Marjorie Lynette Va.
A.B. 1954, The George Washington University
Bingman, Margaret Renshaw D.C.
A.B. 1954, College of Emporia

Bingman, Samuel David, Jr. Colo.
A.B. 1955, College of Emporia
Bingman, Shanah Moyaca Md.
Birch, Terrell Calhoun Md.
Birchfield, Robert Lynn Md.
Birckhead, Christopher N.Y.
A.B. 1933, Harvard University
Bird, Jeanne Meyer Va.
Bird, William Henry N.Y.
B.S. 1953, University of Notre Dame
Birdsall, James Edwin N.Y.
Birnbaum, Susan E. Va.
A.B. 1951, Wellsley College
M.S. 1952, The George Washington University
Birthright, Adnah Judge Md.
B.S. 1935, The George Washington University
Birtles, James Herbert Md.
Birznieks, Andrew Gunars N.Y.
Bischof, Theodore Franklin Va.
Biscontini, Armand Mario Md.
B.S. 1946, University of Scranton
Bish, John Charles D.C.
Bishof, Alfred Earl Va.
Bishop, Curtis Lester Va.
B.S. 1955, Virginia Polytechnic Institute
Bishop, Lila Mueller Md.
Bishop, Teresa Ann D.C.
Bissell, June Elaine Va.
Bisselle, Sara Elizabeth D.C.
A.B. 1933, Radcliffe College
Bittner, John Edward Va.
Bittner, Virginia Anne Md.
Bitton, Francis Idaho
B.S. 1953, Ricks College
Black, Alice Marion D.C.
B.S. 1949, A.M. 1950, Columbia University
Black, Donald Eric S.C.
B.S. 1952, College of Charleston
Black, James Roger N.Y.
Black, John Douglas D.C.
Black, John Woodland Md.
A.B. 1947, University of Washington
M.I.A. 1949, Columbia University
Blackall, Nancy Brewer Mass.
Blackburn, Charles Byrd Fla.
A.B. 1955, Florida Southern College
Blackburn, Eva Katharine D.C.
Blackburn, Juanita Shahan Va.
A.B. 1941, A.M. 1945, West Virginia University
Blackerby, William Wirt D.C.
Blackford, Virginia Lee D.C.
B.S. 1949, American University
M.S. 1951, The George Washington University
Blackshear, Everlee D.C.
B.S. 1945, D. C. Teachers College
A.M. 1949, New York University
Blackwell, Frederick Riley S.C.
LL.B. 1954, University of South Carolina
Blackwell, Thomas Edward Va
A.B. in B.A. 1955, Roanoke College
Blackwood, David Edwin D.C.
B.S. in M.E. 1953, University of Alabama
Blackwood, Frank Austin Md.
B.S. 1940, University of California

Bladergroen, Robert John A.B. 1942, LL.B. 1947, Cornell University	Va.
Blaeuer, Channing Davis A.B. 1955, The George Washington University	Mo.
Blair, Charles Robert B.S. 1956, The George Washington University	Md.
Blair, Mary Birchfield	D.C.
Blair, Neil Addison	Md.
Blair, Warren Emerson LL.B. 1940, De Paul University	D.C.
Blake, Jane Royston B.S. 1953, Roanoke College	Va.
Blake, Wayne David	Md.
Blake, William Henry, Jr.	Va.
Blakemore, Lemuel Anthony B.S. 1935, University of Minnesota A.M. 1949, The George Washington University	Md.
Blakeslee, Ralph David A.B. 1957, Michigan State University	Va.
Blanch, Francis John, Jr. A.B. 1957, The George Washington University	Va.
Blanchard, Carol	Md.
Blanchard, Jean Elizabeth	D.C.
Blanchard, Maxwell Farrar	D.C.
Blank, Marcia B.S. in Ed. 1957, College of the City of New York	N.Y.
Blankenship, Bobby Lee	Va.
Blankenship, Ruth Shelton B.S. 1956, Longwood College	Va.
Blasdell, Beverley Gail	D.C.
Blasetti, Angelo Bartolomeo	Conn.
Blatt, Herbert Lawrence A.B. 1951, Emory University LL.B. 1954, St. John's University	D.C.
Blatteis, Peter Leo	N.Y.
Blaustein, Paul H. B.S. 1953, Columbia University	N.Y.
Bleam, Lois Stone	Va.
Blech, Samuel Herman B.S. 1950, Brooklyn College	D.C.
Blechman, Bruce Jan	D.C.
Blechman, Roger Clark B.S. 1957, Georgetown University	D.C.
Bleckley, Jack Darnell B.S. 1954, Florida State University	Md.
Bledsoe, Ruth Ann	W.Va.
Bledsoe, Samuel Carter A.B. 1952, Haverford College LL.B. 1955, The George Washington University	Md.
Blesch, Robert Rexford B.S. 1951, Ohio State University	Va.
Blevins, Patricia Edith	Colo.
Blickstein, Judith Arlene	Va.
Bligh, Isabel Cassidy B.S. 1954, D. C. Teachers College	D.C.
Bligh, John Edward	D.C.
Bliss, Charles Cushman A.B. 1937, University of California at Los Angeles	Calif.
Blitch, Brooks Erwin A.B. 1956, University of Georgia	Ga.
Blitz, Claire	D.C.
Blitz, Leah Shirley	D.C.
Bliven, Wayne Cletis	D.C.
Bloch, Howard R. A.B. 1958, Duke University	Va.
Blocher, William Frederick, Jr.	Md.
Block, Bridget Maureen A.B. 1956, The George Washington University	D.C.
Block, Ronald Lee	D.C.
Blocker, Hugh Dunwood	Md.
Blodgett, John Russell, Jr.	D.C.
Bloom, Donald George	Pa.
Bloom, Phyllis Norma	Md.
Bloomberg, Marvin Theodore A.B. 1954, Queens College	N.Y.
Blosser, Calvin Stewart	Pa.
Blough, Foster Weaver B.E.E. 1946, Villanova College A.M. in Ed. 1956, Stanford University	Pa.
Blount, Donald Lee	Va.
Blue, Donald Marlow	Va.
Bluestein, Lee Harvey	N.Y.
Blum, Joseph B.S. 1940, College of the City of New York A.M. 1948, The George Washington University	Md.
Blumenstein, Joanne A.B. 1942, University of North Dakota	Va.
Blumenthal, Alan Henry A.B. 1953, San Francisco State College	D.C.
Blunda, Frank Laurence	D.C.
Blunda, Louie Pauline	D.C.
Blus, Harry Peter	Ill.
Blythe, Kernan	Md.
Boardway, Robert Anderson	Va.
Bobb, Stanley A.B. 1957, University of Maryland	D.C.
Bobbitt, Elaine Rose	Md.
Bobo, Annie Ruth B.S. 1955, Benedict College	D.C.
Bobo, Charles Ezell B.S. 1954, Benedict College	D.C.
Bode, Hans Ragnar	Va.
Bodiker, David Henry A.B. 1956, Harvard University	Ohio
Bodner, Bernard A.B. 1954, College of the City of New York	N.Y.
Bodolus, Carl Theodore A.B. in Govt. 1954, The George Washington University	Pa.
Boeck, Brigitte	Va.
Boehlert, Jessie Clara A.B. 1953, The George Washington University	N.Y.
Boehly, Lawrence William	D.C.
Boelens, Joan Hudson	D.C.
Boelke, Donald Richard A.B. 1954, Carleton College	Wis.
Boericke, Harold, Jr. B.S. 1944, M.S. 1952, Massachusetts Institute of Technology	Pa.
Boerlin, Harold Louis II	D.C.
Boerner, Margaret	S.D.
Boesch, David Swaine	Md.
Boezi, Louis Joseph	Pa.
Boghosian, Lily A.B. 1957, Randolph-Macon Woman's College	Iran
Bogosian, Helen	D.C.
Bohan, Jack Lee B.Met. E. 1956, Rensselaer Polytechnic Institute	Va.
Bohan, Paul Francis A.B. in Govt. 1955, The George Washington University	Md.

Bohn, Walter John Va.
Boise, James William Md.
A.B. 1952, The George Washington University
Boisen, Lavon M. D.C.
B.S. 1934, Nebraska State Teachers College
Boisvert, Gerald Eloi Md.
A.B. 1956, The George Washington University
Bok, Derek Curtis Va.
A.B. 1951, Stanford University
LL.B. 1954, Harvard University
Bok, Sissela Ann Va.
A.B. 1957, The George Washington University
Boland, John William D.C.
Bolden, Rexford Coleman D.C.
Bolds, Connie Jean Ind.
Boles, Wesley Dwight Calif.
A.B. 1953, University of California at Los Angeles
Boley, Robert Eugene Va.
A.B. 1953, The George Washington University
Bolger, Frances Mass.
B.S. in Ed. 1950, Massachusetts State Teachers College, Fitchburg
Bolita, Nora Byerly Va.
Bolka, Robert William Va.
Boll, Richard Lee Va.
B.S. in Ch.E. 1939, University of Southern California
Bolter, Delano Woodrow Calif.
Bonanno, Placido Frederick Md.
Bonbrest, Barbara Ann Md.
Bonbrest, Claude Edward D.C.
Bonbrest, Helen Constance Md.
Bond, Gorman Morton Md.
Bond, Harry Isaiah Md.
B.S. 1949, University of Maryland
Bond, Richard Lee D.C.
Bond, Russell Evans Md.
A.B. 1951, Washington Missionary College
Bondareff, Erwin Allen Md.
B.S. in Phar. 1952, The George Washington University
Bondareff, William Md.
B.S. 1951, M.S. 1952, The George Washington University
Ph.D. 1954, University of Chicago
Boneta, Joseph Edward, Jr. Va.
Bonfield, Charles Thomas Va.
B.S. in Phar. 1957, The George Washington University
Bonieskie, Richard Martin Pa.
Bonillo, Lempira Eusebio Honduras
A.B. 1953, The George Washington University
Bonis, Austin Jerome Va.
B.S. 1934, College of the City of New York
A.M. in Govt. 1952, The George Washington University
Bonk, Helen Theresa Md.
A.B. 1957, Immaculata College
Bonner, Aaron Earl D.C.
B.B.A. 1956, Golden Gate College
Bonner, Frederick Marion Va.
Bonnevie, Robert Vance Wash.
Bonski, Louise Marie Pa.
Booker, Jeffie C. Tenn.
Booker, Virginia Carrico Va.
Bookhart, Hoyt Ulmer, Jr. S.C.
B.S. 1939, Clemson Agricultural and Mechanical College
Bookoff, Sheila Dorothy D.C.
Boone, Ann Elizabeth Va.
Boone, Helen Huffman Va.
Boone, William Lewis N.C.
Boonyaprasop, Oranat D.C.
Booth, Elizabeth Tyler Greece
Booth, Henry Healy N.D.
A.B. 1957, University of North Dakota
Booth, Lois Woods Va.
Booth, Phillip Jackson D.C.
Booth, Rexford George Va.
Boothe, Edward Milton Va.
Boothe, William Avis Va.
Bopp, Frank William Va.
Borchardt, Harriet Elizabeth D.C.
Borchardt, Narnie Puryear D.C.
A.B. 1936, Vassar College
Borchers, Carl Roy N.J.
A.B. 1955, Wagner College
Borden, Bonnie Kathryn Calif.
Borden, Donald Wayne S.D.
Borders, Glenn Houghton Mass.
Borge, Leona Marie D.C.
Borger, Henry M. D.C.
Bormann, Martha Ruth Va.
B.S. 1938, Mississippi State College for Women
Bormann, Rosella A. D.C.
Borngesser, Robert Lewis Md.
Bornstein, Garet Alexander D.C.
Bornstein, Harold Martin N.J.
Bortnick, Ronald Jack Md.
A.B. 1956, The George Washington University
Bortniker, Ernest Va.
Borton, Donald Charles Va.
Bosben, Donald Deane Va.
B.S. in C.E. 1950, University of Wisconsin
Bosse, Hildebard S. D.C.
A.B. 1948, Valparaiso University
Bossert, Carl John Md.
B.S. 1955, U. S. Military Academy
Bost, Barbara Gail N.C.
A.B. 1956, University of North Carolina
Bostick, Benjamin E. S.C.
B.M.E. 1947, B.E.E. 1948, Clemson Agricultural and Mechanical College
M.S. in E.E. 1949, Georgia Institute of Technology
Bostick, James Lynn Va.
Boston, Thomas Ray Va.
B.S. 1956, University of Kansas
Boswell, James Herbert N.C.
Boswell, Margaret Guntner D.C.
A.B. 1940, Atlantic Christian College
Bosworth, Everett S. Ind.
B.S. 1948, Purdue University
Botek, Agnes Joan Pa.
Botsford, Harry Gordon Md.
B.S. in Ed. 1948, Ed.M. 1949, Boston University
Botten, James Warren N.D.
B.S. 1941, U. S. Naval Academy
Bottum, Joseph Henry III S.D.
A.B. 1957, The George Washington University
Bouchard, Donald Edward Maine

Bouligny, Earl Ronald	D.C.
Boundy, Richard James	Va.
Bouquet, John Louis	D.C.
Bourdeaux, Thomas Devane A.B. 1954, University of Maryland	Md.
Bourgeois, Louis Doazan B.S. 1951, Howard University	D.C.
Bourne, Thomas Blake IV A.B. 1951, University of Maryland	Md.
Bouton, Charles Earhart B.S. 1952, University of Maryland	Md.
Bow, Alan George	Va.
Bowanko, Daniel	Pa.
Bowdew, Richard Russell	Ga.
Bowditch, Benson Alvord A.B. 1941, Swarthmore College	Va.
Bowen, Allan Fitzgerald	Va.
Bowen, Gay Elizabeth	D.C.
Bowen, Gerald	Va.
Bowen, Isabel Scott	D.C.
Bowen, Lois Green A.B. 1935, American University A.M. 1952, The George Washington University	D.C.
Bowen, Nancy Lee	D.C.
Bowen, Philip Joseph	Va.
Bowen, Robert Julian	D.C.
Bowen, Violet Ella	W.Va.
Bower, Ferdinand Andrew A.B. 1951, Gannon College	Pa.
Bowers, Edgar George	Md.
Bowers, Mary Kathryne	Va.
Bowers, Melville Dorey B.S. 1951, Massachusetts Institute of Technology	Md.
Bowes, Maureen Grace	N.Y.
Bowie, Winifred Doris	Md.
Bowler, Eugene Patrick B.S. 1937, M.S. 1938, Pennsylvania State University	D.C.
Bowling, Charles Bernard, Jr.	Md.
Bowling, Edward Earl	Ky.
Bowling, James Walter	W.Va.
Bowling, Rebecca Steuart	Md.
Bowly, Lawrence Vaughan, Jr. B.S. 1950, American University	Md.
Bowman, Annette Yvonne A.B. 1954, American University of Beirut, Lebanon	Va.
Bowman, Anthony George A.B. 1950, Pennsylvania State University	D.C.
Bown, John Daniel B.S. 1957, University of California	D.C.
Boyd, Harold Loomis B.M.E. 1953, The George Washington University	Va.
Boyd, Harvey Stein B.S. 1945, U. S. Military Academy LL.B. 1953, Georgetown University	Pa.
Boyd, Luciann Prentice	Mass.
Boyd, Mary Agnes	Md.
Boyd, Robert Newton A.B. 1951, University of California at Los Angeles	Va.
Boyd, William Cornelius B.S. 1938, D. C. Teachers College	D.C.
Boydston, Grover Cleveland, Jr.	D.C.
Boye, Robert James B.S. 1955, University of Oklahoma	Md.
Boyer, Anne Caroline	Va.
Boyer, Beverley Ann	Va.
Boyer, Donald deForest	Md.
Boyes, Barbara Ann A.B. 1947, University of Minnesota	D.C.
Boykin, Lester Junod A.B. 1946, Duke University B.S. 1950, U. S. Merchant Marine Academy	D.C.
Boyle, Albert Louis	Pa.
Boyle, Phyllis Patricia B.S. 1955, State College of Washington	D.C.
Boyle, Robert Shaffer	Md.
Brabham, Josiah Campbell	Va.
Bracewell, Joseph Riley, Jr. B.S. 1932, Georgia Institute of Technology	Va.
Bracken, Catherine C. B.S. 1926, Immaculata College, Pa.	D.C.
Bracken, Dwight Clovis A.B. 1923, The George Washington University	D.C.
Bracken, Harry Jerome, Jr. B.S. in C.E. 1957, Carnegie Institute of Technology	Pa.
Brackett, Mary Brackett A.B. 1930, Wells College	Md.
Braddock, Juanita Wormley B.S. 1956, D. C. Teachers College	D.C.
Braden, Clara Marie	D.C.
Bradford, Altamai Johnson B.S. 1948, North Carolina College at Durham M.S. 1949, Indiana University	D.C.
Bradley, David Quentin	D.C.
Bradley, Ernest Howell, Jr.	Va.
Bradley, Jacqueline Letitia B.S. 1957, Dunbarton College of Holy Cross	D.C.
Bradley, Jack Huron	Fl
Bradley, Joyce Ann	Md.
Bradley, Kathryn Hoyle A.B. 1938, University of Pennsylvania A.M. 1940, Bryn Mawr College	Md.
Bradley, Kenneth Wilson	Ill.
Bradley, Martha Harmon A.B. 1936, University of South Carolina A.M. 1944, George Peabody College for Teachers	Va.
Bradley, Robert Benton B.S. in E.E. 1956, University of Missouri	Mo.
Bradley, Starling Simmons	Va.
Bradshaw, Doyle Verlin	Md.
Bradshaw, Jerald Sherwin B.S. 1955, University of Utah	Utah
Bradshaw, John Thomas B.S. in E.E. 1940, Worcester Polytechnic Institute	Mas
Bradshaw, Naomi Adelaide	D.C.
Brady, Edward Leo A.B. 1941, Loyola University of Los Angeles	Cali
Brady, Ellen Carolyn B.S. 1949, D. C. Teachers College	D.C.
Brady, Georgina Helen A.B. 1950, London University	Englan
Brady, Gerald Thomas	D.C.
Bragdan, Sara Frances A.B. 1944, Baylor University	Tex
Bragg, Donald Edison	Va.
Bragg, Medicus Ernest B.S. 1949, Wake Forest College	N.C.
Brailey, William Elloris B.S. 1955, Virginia Union University	D.C.

Brainard, John Whiting N.J.
B.S. 1953, U. S. Naval Academy
Bralove, Edith Karasick D.C.
A.B. 1937, Wellesley College
Bram, Bert D.C.
Bramhall, Janet Natalie D.C.
Branca, Leonora Alice D.C.
Branche, William Charles, Jr. D.C.
A.B. 1956, Ohio Wesleyan University
Branchi, Eugene George D.C.
Branco, Joseph James Va.
Brandenburg, Agnes Y. N.Y.
Brandenburg, Delbert Eugene Ohio
Brandon, Gilbert Lionel Va.
Brandon, Reginald Francis Md.
Brandt, Paul Anthony Mass.
Brannen, Robert Harris D.C.
Branning, Arthur Livingston Ga.
B.E.E. 1952, Georgia Institute of Technology
Branning, Lorraine Adrienne Va.
Brannock, Charles Duke D.C.
Brannon, Janice Lee Okla.
Brannon, Russell Herbert Okla.
B.S. 1954, Oklahoma Agricultural and Mechanical College
Branscomb, William Maurice, Jr. Va.
Branstetter, Jane Ellen Va.
Branstetter, Mark Duane D.C.
Bratman, Audrey Iris N.Y.
A.B. 1954, Queens College
A.M. 1956, Middlebury College
Braun, Stuart Lee Md.
B.E.S. 1957, Johns Hopkins University
Braund, Richard John N.Y.
A.B. 1951, Syracuse University
Braverman, Stephen Troeder Va.
Braxton, Celestine Scott Va.
B.S. 1949, North Carolina State Teachers College, Elizabeth City
Bray, Arlene Rawdon Va.
Bray, Joseph Edward Md.
Bray, Lucile Kenton Miss.
Brazee, Rutlage J. D.C.
A.B. 1950, University of Connecticut
Brazerol, Nancy Elizabeth Md.
Brazinsky, Adolph Bernard Pa.
Bream, Lynn Stevens Md.
Breckley, Janice Corrine Va.
Brede, Edward Herb Ohio
A.B. 1956, Yale University
Breedlove, William Harlan Md.
A.B. 1952, Indiana University
Breedon, William Franklin Va.
Breen, Mary Helen D.C.
Breen, Michael T. Va.
Breese, Charles Lewis N.Y.
Bregman, Sandra Elizabeth Va.
Bregman, Stanley Irwin Va.
A.B. 1956, The George Washington University
Brehm, Larry David Kans.
Brein, Miriam Marlene D.C.
B.S. 1953, D. C. Teachers College
Brekke, Darrell Gene S.D.
B.S. in E.E. 1954, South Dakota School of Mines and Technology
Brem, Charlotte Harriet D.C.
Brener, William Burton Pa.
Brennan, Edwin Charles Idaho
A.B. 1953, Idaho State College
Brennan, Howard Valentine N.Y.
Brennan, James Joseph D.C.

Brennan, William Charles Conn.
A.B. 1957, Catholic University of America
Brennan, William Francis D.C.
B.S. 1949, University of Scranton
A.M. in Ed. 1953, The George Washington University
Brennan, William James, Jr. Pa.
A.B. 1954, St. Joseph's College
Brenner, Alta Maurine D.C.
Brent, Anne Fenwick Va.
A.B. 1952, Oberlin College
Breskin, Kenneth Jay N.Y.
A.B. 1953, LL.B. 1956, Harvard University
Breslin, Louise Marie Va.
Bressler, Dobra Helene D.C.
Breston, Michael Pemow Md.
B.S. 1955, University of Maryland
Bretschneider, Ann Margery Mass.
B.S. 1957, Northeastern University
Brett, Nettie Norman D.C.
Brett, Patricia Fae D.C.
Brett, Sue McGlaughan Md.
A.B. 1924, A.M. 1936, University of North Carolina
Brewer, Barbara Ellen Va.
Brewer, Charles Moulton Md.
A.B. 1953, University of Maryland
Brewer, Clyde Richard Pa.
B.S. in E.E. 1953, Pennsylvania State University
Brewer, Dorothy Zelia N.M.
A.B. 1957, The George Washington University
Brewer, Melvin Turner Va.
Brewer, Toni Layton Va.
Brewster, Edward Chambers Va.
B.S. in C.E. 1932, Michigan State University
Brewster, Thomas William Ky.
Brian, Lester Becker D.C.
Briceno, Antonio D.C.
Brick, Nancy Wolverton Va.
A.B. 1957, Trinity College
Brickman, Gerald Stanley Md.
Brideson, William Emerson Va.
Bridge, David Md.
B.S. in C.E. 1950, Virginia Polytechnic Institute
Bridgeforth, Donald Miller Ind.
A.B. 1955, Boston University
Bridgers, Bernard Thomas N.C.
B.S. 1940, Wake Forest College
B.S. 1951, North Carolina State College
M.S. 1952, University of Maryland
Bridgers, Harvey Clifton Pa.
A.B. 1953, Grove City College
Bridges, Donald Reid Md.
Bridgman, Jack Henry N.Y.
Bridgman, James Morrill Conn.
Brien, Cyprien Lucien, Jr. N.H.
Briggs, Nancy Carolyn D.C.
Briggs, Robert Oliver Va.
Brigham, George Allen Mass.
Briley, Marian Louise D.C.
A.B. 1954, Livingstone College
Brill, Mary M. Md.
Brinck, Margit Ragnhild Minn.
Brindamann, Anita Jane N.J.
Brinker, Michael Patrick D.C.
Briody, Thomas Allen Va.
B.E.E. 1952, Villanova University

Briscoe, Francis E. Va.
B.S. in B.A. 1949, University of Oklahoma
Brish, William Murray Md.
A.B. 1928, Franklin and Marshall College
A.M. 1932, Columbia University
Brisker, Barbara Sue D.C.
Brisker, Sarah Franklin D.C.
B.S. 1926, University of North Carolina
A.M. 1935, The George Washington University
Briskin, Irene Orgel Va.
A.B. 1942, University of California at Los Angeles
A.M. 1949, Columbia University
Bristor, James Lloyd D.C.
B.S. 1954, Waynesburg College
Britt, Dorothy Schulz Va.
Britt, James Joel D.C.
Brittain, Emily Ruth Mass.
Brittin, Edward Baylis Md.
B.S. 1953, The George Washington University
Brittingham, Irene Catherine Mich.
A.B. 1956, The George Washington University
Britton, Joanne Louise Va.
Britton, Martha Alice D.C.
Brizzi, Katherine Frances D.C.
Broaddus, Vivian Gwynne Va.
Broadhurst, John Alfred Va.
Broadus, Lois Elaine D.C.
A.B. 1940, D. C. Teachers College
A.M. 1951, New York University
Brock, Clarence Columbus, Jr. D.C.
B.S. in E.E. 1943, U. S. Naval Academy
Brock, Harriet E. N.Y.
A.B. in Ed. 1930, Milwaukee State Teachers College
Brock, Lawrence Anthony Md.
A.B. 1950, LL.B. 1953, Western Reserve University
Brockdorff, Olaf Gilbert Md.
B.S. in P.E. 1956, The George Washington University
Brockman, Paul Robert Kans.
Broda, John Joseph Md.
Broderick, William D. Mich.
A.B. 1949, University of Detroit
A.M. 1952, Wayne University
Brodie, Alfred Harper Md.
B.S. 1937, University of California
Brodie, Robert, Jr. Md.
B.S. 1927, U. S. Naval Academy
Brodsky, Arnold Bruce Md.
Brodsky, Donna Louise D.C.
Brodsky, Irma Lois Mo.
Brodsky, Paulette Sharna D.C.
Broesamle, Jack Richard Va.
Brogan, Francis Allen Nebr.
A.B. 1949, Carleton College
Brogdon, Jennie Low Md.
B.S. 1955, University of Marland
Broh-Khan, Jere Ohio
A.B. 1954, Harvard University
Brombacher, Nancy Jean Md.
A.B. 1944, Marietta College
Bronczyk, Arthur Francis D.C.
A.B. 1954, Maryknoll College
Bronstein, Esther Eve Del.
Brooke, Alban Emerson Md.
A.B. 1953, The Citadel

Brooke, James C.
Brooks, Arthur William, Jr.
Brooks, Betty Aleatha
B.S. 1952, D. C. Teachers College
A.M. 1954, New York University
Brooks, Elizabeth Stewart
B.S. in Ed. 1943, Boston University
Brooks, Janet
B.S. 1941, Ohio State University
Brooks, Mark Norman
Brooks, Priscilla Jean
Brooks, Robert Ashton
Brooks, Roy Irving
B.S. 1948, Texas Agricultural and Mechanical College
Ed.M. 1955, Boston University
Brooks, Toby J.
Brooks, William Allen, Jr.
A.B. in Ed. 1954, The George Washington University
Brooks, William Armand
Brooks, Zelma Jones
Broom, Ruby Christine
Broomhall, Roberta Carlock
B.S. 1946, University of Maryland
Brophy, Gilbert Thomas
B.S. in B.A. 1949, University of Florida
Brophy, John Neal
Broshear, Maude Miller
A.B. 1956, Cornell College
Brosky, Mary Jane
Brosnan, Carol Raphael
Brothers, Donald Wallace
Brothers, Elizabeth Corinne
Brotman, Sandra
Brotman, Shannon Maureen
Brott, Donald Joseph
B.S. in E.E. 1953, LL.B. 1957, University of Wisconsin
Broussard, Joseph Martin
B.S. 1957, Georgetown University
Browder, Virginia Niblo
Brown, Aimee Thomas
A.B. 1925, University of Minnesota
Brown, Ainsworth Howard
A.B. 1955, Gettysburg College
Brown, Allison Travis
Brown, Barbara Ann
Brown, Barbara Fitzhugh
Brown, Beverley Andrea
Brown, Carl Robert, Jr.
A.B. 1950, University of Michigan
Brown, Colleen Joyce
Brown, Doris Erdman
A.B. 1930, University of Utah
Brown, Ernest Walter, Jr.
B.E.E. 1955, University of Florida
Brown, Florence Catherine
Brown, Genevieve Swann
B.S. 1936, D. C. Teachers College
A.M. 1950, Howard University
Brown, Geoffrey John Hatton
Brown, George Edwin, Jr.
A.B. 1947, Harvard University
Brown, Gerald Ross
Brown, Glenn Meredith
Brown, Grover Cleveland
A.B. 1957, University of North Carolina
Brown, Harry Silsby, Jr.
A.B. 1952, University of Missouri
Brown, Howard Kyner, Jr.
A.B. 1945, Bridgewater College
Brown, Jack Edwards

Brown, James B.S. 1955, North Carolina College	N.C.
Brown, James Edward B.S. 1953, Virginia Union University	Va.
Brown, John Parker	Va.
Brown, Lee Roy, Jr. B.S. 1950, University of Alabama M.S. 1956, The George Washington University	Md.
Brown, Lois Jennings A.B. 1957, Carleton College	R.I.
Brown, Lucy Kittrell B.S. 1940, D. C. Teachers College A.M. 1951, New York University	D.C.
Brown, Luther Adolphus, Jr. B.S. 1957, University of Maryland	D.C.
Brown, Margaret Catherine	Va.
Brown, Marion Louise B.S. 1955, Howard University	D.C.
Brown, Marjorie Gordon	D.C.
Brown, Mary Elizabeth A.B. in Ed. 1955, The George Washington University	Va.
Brown, Mary Louisa	Mexico
Brown, Michael Edward A.B. 1957, The George Washington University	D.C.
Brown, Minnie Ray	D.C.
Brown, Nan Wilma A.B. 1956, University of North Carolina	Md.
Brown, Norwood Joseph	Pa.
Brown, Oril Irene B.S. 1930, Northwestern University A.M. 1951, The George Washington University	Va.
Brown, Philip Ankeny	D.C.
Brown, Philip Thayer A.B. 1950, Upsala College	N.J.
Brown, Phoebe Woodson	Calif.
Brown, Priscilla Marie	Va.
Brown, Richard Stephen B.S. 1942, Maryland State Teachers College, Bowie A.M. 1949, New York University	Md.
Brown, Robert Paul	Md.
Brown, Ruth Elizabeth A.B. 1941, University of Alabama	D.C.
Brown, Samuel Heffner	D.C.
Brown, Theodore Locke A.B. 1955, Colby College	Va.
Brown, Thomas Stewart B.S. in M.E. 1956, Tufts University	Mass.
Brown, Virgil Leonard	D.C.
Brown, Walter Lee	Md.
Brown, William Garrison	D.C.
Brown, William McCormick A.B. 1956, Duke University	Md.
Brown, William Theodore	Va.
Browne, Eleanor Jane	Ga.
Browne, Frances Elizabeth A.B. 1944, Howard University	D.C.
Browne, Milton Ronald A.B. 1957, The George Washington University	Md.
Browne, Richard Allen	Md.
Browne, William Robert B.C.E. 1950, Cornell University	Va.
Brownell, Joyce Ann	Ohio
Brownell, Mary English	Va.
Browning, Mary J. A.B. 1951, Mount Holyoke College	D.C.
Brownlow, Wilfred John B.S. and M.S. 1952, University of Wisconsin	Ill.
Brownstein, Franklin William	R.I.
Brownworth, Frederick S., Jr. B.S. 1950, Syracuse University	Va.
Brozena, John Michael	Pa.
Bru, Norman James A.B. 1956, University of California	Calif.
Brubaker, Robert A.B. 1956, University of Delaware	Md.
Bruce, William Gregory	Md.
Bruckheimer, Avis Baber	Va.
Bruckner, Gloria Agnes	Va.
Brudner, Harvey Jerome B.S. 1952, M.S. 1954, New York University	N.Y.
Brudner, Lilyan Amdur	D.C.
Bruff, William Theodore, Jr.	Md.
Bruffey, Albert Henry	Md.
Bruffey, Doris Severe	Va.
Bruhn, John Richard A.B. 1956, Carleton College	Ala.
Bruin, Helen Curley A.B. 1955, The George Washington University	D.C.
Brumbaugh, Frank Samuel B.S. 1954, Juniata College	Pa.
Brummer, Gordon Stanley A.B. 1955, Colgate University	N.J.
Brun, John Albert	D.C.
Bruner, William Joseph	Ala.
Brunetti, Oswaldo	D.C.
Brunk, Hugh Leland, Jr. B.S. in E.E. 1957, University of Nebraska	Va.
Bruno, Mona Constance A.B. 1950, Trinity College A.M. 1952, Catholic University of America	Md.
Bruns, Eugene Benson A.B. 1957, University of Virginia	D.C.
Brush, John A.B. 1951, Drake University	N.J.
Brushwood, Richard Ellsworth	Va.
Bruss, Sherrard Van Cleef A.B. 1941, University of Alabama	Fla.
Bryan, Howard Youe B.S. 1953, University of Omaha	Va.
Bryan, John Russell, Jr. B.S. in Ed. 1953, Maryland State Teachers College, Frostburg	Md.
Bryan, Walter Gilbert	N.M.
Bryant, John Ernest A.B. 1950, University of California	Md.
Bryant, Robert Singleton B.S. 1954, The George Washington University	D.C.
Bryant, William Anthony B.S. 1955, University of Maryland	Md.
Bryer, Herbert Thomas B.S. 1955, Trinity College	Va.
Bryman, Harold B.S. 1951, Wayne University	Calif.
Bryson, Laurance Mathews	Va.
Bryson, Ruth-Lois Cotter A.B. 1949, Mary Washington College	D.C.
Brzozowski, Edmund B.E.E. 1950, The George Washington University	Md.
Bucarion, Richard Lewis B.S. 1957, Mount Union College	Ohio
Bucci, Dominick Anthony	Md.
Buchanan, George Stevenson	Va.
Buchanan, John Dewey, Jr.	D.C.
Buchanan, Keith Elwyn B.S. 1956, University of Wisconsin	Wis.

Buchanan, Marjorie Robinson D.C.
B.S. 1946, D. C. Teachers College
Bucher, Abbott Green D.C.
A.B. in Ed. 1931, The George Washington University
A.M. 1957, American University
Bucher, Edna Walter D.C.
Buck, Charles Urquhart D.C.
Buck, Eleanor Moore Md.
B.S. 1947, University of Maryland
Buck, Robert Max Md.
B.S. in E.E. 1944, Worcester Polytechnic Institute
Buckbinder, David R.I.
A.B. 1952, University of Iowa
Buckham, Sharon Va.
Buckhout, Edward Thomas Va.
Bucklee, Brian Brooks Md.
A.B. 1951, University of Pennsylvania
Buckley, Robert Dayton D.C.
Buckman, Charles Abraham Md.
Buckman, Norma Kay Md.
A.B. 1955, Roosevelt University
Buckman, William Hugh Md.
A.B. 1951, Johns Hopkins University
Bucknell, Barbara Jean Mich.
Buday, Joseph Va.
Budge, Dorothy Helen Va.
Budway, Robert Roy D.C.
Buehler, Anna Marie D.C.
A.B. 1955, Dunbarton College of the Holy Cross
Buehler, Florence Margaret N.J.
Bueker, Robert Clark Mo.
A.B. 1954, University of Missouri
Bueno, Argia Ziggiotti D.C.
Buist, Marilyn Jean N.Y.
A.B. 1953, Middlebury College
Bulla, Beatrice D.C.
A.B. 1911, Vassar College
Bullard, Carl Fredrick Va.
Bullington, Claire Doiron Md.
A.B. 1949, Mary Washington College
Bullington, Edward Weeks Md.
B.S. 1947, Randolph-Macon College
M.S. 1948, Virginia Polytechnic Institute
Bullis, Barbara Starr Md.
Bullock, Camille Prato D.C.
Bullock, Donetha Crist Va.
Bullock, Joseph Jay Idaho
B.S. 1954, Brigham Young University
Bulman, Leonard Zinnamon Md.
A.B. 1956, University of Maryland
Bundy, David Clinton Ohio
Bundy, Velma Shields D.C.
Bunke, John William Wis.
Bunor, Joseph Stanley Pa.
Bunting, Henry Paul D.C.
B.S. 1950, New York University
Bunz, Claus Heinrich Iowa
B.S. 1957, Iowa State College
Buonagurio, Hugo Vincent D.C.
Buono, Robert David Mass.
Burch, Alan Irwin Va.
Burchard, Duncan Riggs D.C.
Burckhalter, Felicity Ada D.C.
Burda, Michael N.J.
Burdett, Melvin D.C.
Burdette, Frances Ryan Va.
Burdge, David Clark D.C.
Burdick, Harry Franklin Md.
B.S. 1951, University of Maryland

Burgener, Robert Ernest Va.
B.S. 1954, Utah State College
Burgess, Catherine D.C.
Burgess, Harry Charles N.Y.
A.B. 1956, LL.B. 1957, Syracuse University
Burgess, James Earle Va.
Burgess, Johanne I. Mass.
A.B. 1952, Stanford University
Burgess, Mary Josephine N.Y.
A.B. 1956, Catholic University of America
Burgett, Charles Lincoln Va.
B.S. 1947, Ball State Teachers College
Burgin, Adelaide Lonsdale D.C.
Burk, Wendy D.C.
Burkam, Douglas Rammelsberg D.C.
Burke, Catherine Regina D.C.
A.B. 1953, Duke University
Burke, Frances Veasey Md.
Burke, James Lansing, Jr. Md.
Burke, James Richard, Jr. Md.
B.S. 1956, University of Maryland
Burke, John Francis Md.
Burke, Joseph Patrick D.C.
B.S. 1955, Marquette University
Burke, Kenneth Stanley D.C.
Burke, Loretta N.Y.
Burke, Margaret Elizabeth D.C.
A.B. 1948, The George Washington University
Burke, Martha Frances D.C.
B.S. in Com. 1947, Florida State University
Burke, Robert Thomas N.Y.
A.B. 1947, Princeton University
Burkett, Helen Louise Va.
Burkett, Jane Elizabeth D.C.
Burkhalter, Thelma Kanatzar Md.
Burkhardt, Albert Penniwell, Jr. D.C.
A.B. 1951, Temple University
Burkhardt, Robert Reign Va.
Burks, Craighill Stoner Va.
B.S. 1941, Hampden-Sydney College
A.M. 1952, The George Washington University
Burleson, Malcolm Macy Va.
Burner, Edwin Faunce Va.
B.S. in Aero. Eng. 1942, Virginia Polytechnic Institute
Burneston, George Irwin, Jr. Md.
Burnett, James Ambrois Md.
Burnett, Melvin Max Texas
A.B. 1956, University of Maryland
Burnham, John Milton Va.
B.S. 1952, U. S. Merchant Marine Academy
Burnham, Theresa Frances Va.
Burns, Carl Ray Va.
A.B. 1948, Simpson College
A.M. 1949, University of Iowa
Burns, Dorothy Hazel Va.
Burns, Edward K. Md.
A.B. 1943, University of Notre Dame
Burns, Helen Spann D.C.
Burns, John Curtis Md.
Burns, Maureen Judith Md.
Burns, Robert Rudolph Minn.
B.Ae.E. 1938, University of Minnesota
Burns, Rollin Lee Md.
A.B. 1932, Wheaton College
A.M. 1935, Princeton University
A.M. in Personnel Adm. 1957, The George Washington University

Burr, Charles Herbert, Jr. Va.
B.S. 1943, U. S. Military Academy
Burrill, John Colburn Va.
B.S. 1938, U. S. Naval Academy
Burrill, Robert Meredith Md.
A.B. 1955, Wesleyan University
Burris, Lola Mo.
Burroughs, Audria Phillips D.C.
Burrows, Lawton Arthur, Jr. Va.
B.S. in Ch.E. 1957, University of
Delaware
Burrows, Roland Amery Texas
Burson, Edna Ruth Miss.
Burtner, Carrol Elmer Va.
B.S. 1947, Worcester Polytechnic
Institute
Burtnieks, Agnes D.C.
Burton, Bessie Eileen Va.
A.B. 1954, Kent State University
Burton, Lamar Lyon, Jr. Va.
Burton, Laurence J. Utah
B.S. 1951, University of Utah
M.S. 1956, Utah State University
Burton, Louise Howard Va.
Burtram, Karl Marx Md.
Buser, Elizabeth Anne D.C.
A.B. 1948, The George Washington
University
Bush, George William Va.
Bush, Nicolas D.C.
A.B. 1952, Waynesburg College
Bushey, Marylyn Lucille D.C.
Bushey, Richard James N.Y.
Bushman, Wilma Jeannette Ind.
Bushner, Rolland Haggart D.C.
B.Mus. 1942, Kansas State Teachers
College, Pittsburgh
Busits, Louis Frank Md.
Busky, Henry Frederick Md.
Bussard, Richard H. Va.
B.E. 1929, Johns Hopkins University
Busse, Ellen Marie Va.
Bussey, Naomi D.C.
B.S. 1956, D. C. Teachers College
Bustos-Videla, Cesar D.C.
Butera, Alfonso Hugh Pa.
B.S. 1954, University of Maryland
Butland, Gloria D.C.
Butler, Florence Lake Md.
B.S. 1947, Hampton Institute
Butler, Gabrielle Frances Va.
Butler, James Carlton Va.
Butler, Josephine Louise Ga.
A.B. 1937, University of North Carolina
Butler, Levada Ruth D.C.
Butler, Norton D.C.
B.S. 1954, University of Maryland
Butler, Pelham Clark Ala.
Butler, Robert Edward Ohio
A.B. 1953, Bowling Green University
Butler, William Marquis, Jr. D.C.
B.S. 1951, M.S. 1954, Howard
University
Buttermark, Robert James Va.
A.B. 1956, Rutgers University
Butters, June Worley Va.
A.B. 1940, College of William and Mary
Buttles, Bruce Calif.
A.B. 1930, University of California
M.S. 1936, Columbia University
Buttolph, Carolyn Kistler D.C.
Buttram, Philip Alvin Va.
Buwalda, Philippina Juliana D.C.

Buxbaum, Phyllis Lou D.C.
LL.B. 1949, The George Washington
University
Buxton, Horace Childs, Jr. Va.
A.B. 1937, Bowdoin College
M.B.A. 1939, D.C.S. 1949, Harvard
University
Buxton, Mary Abigail Va.
Buxton, Wayne Hathaway Va.
Byers, John North D.C.
Byrd, Betty Jean Va.
Byrd, John Henry, Jr. Conn.
B.S. 1952, U. S. Coast Guard Academy
Byrd, Lewis Andrew, Jr. Va.
B.S. in C.E. 1952, University of
Washington
Byrd, Mona Carol Va.
Byrd, Nancy Jones Md.
A.B. 1957, The George Washington
University
Byrd, Olive Jones D.C.
B.S. 1942, D. C. Teachers College
Byrd, Richard Jackson Md.
Byrn, John William N.M.
B.S. 1941, M.S. 1948, Cornell
University
Byrne, George Charles D.C.
A.B. 1951, Fordham University
Byrne, James Joseph Va.
Byrne, John Andrew D.C.
B.S. in B.A. 1949, Babson Institute
of Business Administration
M.B.A. 1956, The George Washington
University
Byrne, Robert Joseph Md.
D.V.M. 1944, Cornell University
Byron, Alexander Mass.
A.B. 1953, Duke University

C

Cabelus, Thomas Joseph, Jr. Va.
A.B. 1953, Syracuse University
A.M. in Ed. 1956, The George
Washington University
Cabiya, Carmen Rosa Puerto Rico
A.B. 1954, University of Puerto Rico
Caceres, Manuel Richard N.Y.
Cacheris, James Chris D.C.
B.S. 1955, University of Pennsylvania
Cadwell, Blythe Ellen Ill.
B.S. 1957, Marquette University
Cady, Charles Brimble Conn.
Caffrey, Charles Augustine Pa.
A.B. 1952, Wilkes College
Cafritz, Enid Pearle D.C.
Caglarcan, Muhittin Erol Va.
Caglayan, Ali Haydar Turkey
B.S. 1938, University of Bordeaux,
France
Cahill, Harry Amory Va.
A.B. 1951, Manhattan College
Cahill, John Joseph Pa.
B.S. 1956, University of Pennsylvania
Cahill, William Charles Va.
B.E.E. 1955, B.M.E. 1956,
University of Akron
Cahn, Charles II Va.
B.S. 1954, University of Maryland
Cahoon, Lynda Lee Md.
A.B. 1954, The George Washington
University
Caillois, Catherine D.C.
Caine, Stephen Va.

Caiola, Nicola L. Italy
Doctor in Law 1947, University of Rome, Italy
Cakica, Harika Turkey
Cakici, Behzat Turkey
Cakouros, John D.C.
Calapristi, Anthony Francis Pa.
B.S. in Ch.E. 1940, Villanova University
Caldwell, Charles Sargent Texas
Caldwell, Clarence Vernon, Jr. Fla.
Caldwell, Donald Morgan D.C.
Caldwell, Donald William Va.
Caldwell, Elizabeth Anne Md.
Caldwell, Ernestine Barry Md.
A.B. 1934, Alfred University
Caldwell, Joseph Alton S.C.
B.S. 1949, University of South Carolina
Caldwell, Rufus Ayers Va.
B.S. 1953, University of Virginia
Calhoun, Frances Mitchell Va.
A.B. 1955, Hollins College
A.M. 1958, Duke University
Calhoun, Loene Kramer Va.
A.B. 1938, University of Nevada
Calicchio, Loretta Anne N.Y.
Caligiuri, Peter D.C.
A.B. 1951, West Liberty State College
Calingo, Roni Mauro D.C.
Calkins, Emugene Rose Va.
Call, Elizabeth Zitner Va.
Call, Richard Grant Idaho
Call, Russell John N.H.
Ed.B. 1956, New Hampshire Teachers College, Plymouth
Callaghan, Thomas Francis Pa.
B.S. in I.E. 1957, University of Pittsburgh
Callahan, Daniel Joseph D.C.
A.B. 1954, Williams College
Callahan, Nancy Calif.
Callahan, Walter Alfred Pa.
Callan, Martin Patrick Pa.
B.S. in C.E. 1928, Villanova College
Callan, Robert Martin Va.
Callander, Donald Bruce Va.
Callaway, Elbert Maye Va.
A.B. 1927, West Virginia University
Callaway, Kenneth Miller D.C.
Callaway, William Kendall Va.
Callegaro, Pedro D.C.
Callens, Robert Arthur Md.
B.S. 1953, University of Maryland
Callihan, William Vincent D.C.
Callis, Ruth Beatrice Va.
B.S. 1948, D. C. Teachers College
A.M. 1953, New York University
Callison, Gordon Miles Pa.
Callow, John Frederick Va.
Callow, John Henry Va.
Calloway, James Richard Del.
Calvan, Pablo Antonio D.C.
Calvert, Clare Elizabeth Va.
Calvert, Joan Patricia D.C.
B.S. 1957, The George Washington University
Calvert, Robert Wayne Kans.
Calvo, Robert Camilo N.J.
B.S. 1956, Rutgers University
Camara, Helen Loretta D.C.
A.B. 1943, Wheaton College
Cambosos, Nicholas Michael D.C.
B.S. 1953, M.S. 1954, The George Washington University

Cambra, Victor Vincent Pa.
Cambron, Frank M. Md.
A.B. 1935, University of Montana
Cameron, Don Bruce Va.
A.B. 1952, University of California at Los Angeles
Cameron, Miriam Kohl Va.
B.S. in Ed. 1951, Temple University
Cameron, Robert S. D.C.
A.B. 1951, University of Southern California
M.I.A. 1957, Columbia University
Campagna, Joseph Francis D.C.
A.B. 1955, College of William and Mary
Campana, Frank Charles D.C.
Campbell, Barbara Va.
LL.B. 1950, The George Washington University
Campbell, Cecelia Ann D.C.
Campbell, Constance Joan Va.
Campbell, Donald Allen Va.
Campbell, Donald Eugene Colo.
Campbell, Elaine Bradshaw D.C.
B.B.A. 1942, University of Georgia
Campbell, Elijah D.C.
Campbell, Gerald Ross D.C.
A.B. 1947, University of Western Ontario
Campbell, Howard George Va.
Campbell, James, Jr. Va.
B.S. in E.E. 1956, University of Colorado
Campbell, James Joseph Pa.
B.S. 1957, Mt. St. Mary's College
Campbell, John Va.
A.B. 1955, University of Washington
Campbell, John David II Calif.
A.B. 1954, University of California at Los Angeles
Campbell, Morna Margaret D.C.
Campbell, Robert Lee Va.
Campbell, William Goodman Idaho
B.S. 1956, University of Nebraska
Campuzano, Juan Rangel D.C.
Canady, Donald William Ill.
B.S. in Met. Eng. 1951, University of Missouri
Canby, Thomas Yellott, Jr. Md.
A.B. 1952, University of Virginia
Candish, George Wallace Md.
Canfield, Raymond James Md.
Canfield, Vernell Dean Va.
A.B. 1955, University of California
Canham, David William, Jr. Wash.
Cannon, Irene B. D.C.
B.S. 1957, D. C. Teachers College
Cannon, John Andrew Md.
Cannon, Margaret Ona Md.
Cannon, Robert Lamar Va.
A.B. 1956, Duke University
Cannon, Ross Warren Mont.
A.B. in B.A. 1951, LL.B. 1957, Montana State University
Cantley, Norman Joseph Calif.
B.S. 1958, University of Maryland
Cantor, Jay M. Pa.
B.S. 1956, A.B. 1957, University of Pennsylvania
Cantrell, Robert Wendell Mo.
Canty, George D.C.
B.S. 1954, University of Pittsburgh
Capello, Bruno Italy
Capobianco, Joseph Thomas Md.
Caporali, Lamberto Italy

Cappel, Joyce Marie B.S. 1954, Miami University	D.C.
Cappello, Adam E. B.S. 1946, Temple University	D.C.
Capps, Anna Joyce A.B. 1957, The George Washington University	D.C.
Capps, William Lee	Va.
Caraccilio, John Robert	Pa.
Carcamo, Graciela	Italy
Cardascia, Lucrezia Cecilia	D.C.
Cardeilhac, Paul Thiers D.V.M. 1954, Texas Agricultural and Mechanical College	Okla.
Cardinale, Anthony B.S. 1952, D. C. Teachers College	Va.
Cardon, Betty M.	Va.
Carey, John Joseph	Mass.
Carey, William Theodore, Jr.	Va.
Carin, Philip B.B.A. 1950, College of the City of New York	N.Y.
Carle, Patricia Louise A.B. 1952, Skidmore College	N.H.
Carlile, John Philip	Okla.
Carlisle, Dale Louis B.S. in B.A. 1957, University of Idaho	Wash.
Carlson, David Roland B.S. in Phar. 1953, Drake University	Ill.
Carlson, Diana Maria	Va.
Carlson, Duane Harold A.B. 1950, Gustavus Adolphus College B.D. 1954, Augustana Theological Seminary	Va.
Carlson, Gladys Swanson	Va.
Carlson, Herbert Donald	Md.
Carlson, James LeRoy	Md.
Carlson, Judith Ann	D.C.
Carlson, Leonard Richard A.B. 1952, Michigan State University	D.C.
Carlson, Marcia Ann A.B. 1956, The George Washington University	D.C.
Carlson, Maryjo Suverkrup	Va.
Carlson, Merle Thomas B.S. in B.A. 1957, University of Nebraska	Nebr.
Carlson, Robert William M.E. 1953, Stevens Institute of Technology	N.J.
Carlton, George Houston B.S. 1957, University of Maryland	Texas
Carmeli, Naomi	Israel
Carmichael, John Leslie, Jr. A.B. 1951, Vanderbilt University A.M. 1956, Columbia University	Ala.
Carmichael, William Edward	Va.
Carmody, Cornelius Christopher	Va.
Carnahan, Barbara	Pa.
Carney, Alma A. Hammond A.B. 1936, East Carolina State Teachers College	Va.
Carney, Helen Ann B.S. 1953, Syracuse University	N.Y.
Carney, John Francis B.S. 1957, Northeastern University	Mass.
Carney, Robert Irving, Jr.	Md.
Carolan, Mary Catherine A.B. 1957, Trinity College	Md.
Carone, Lawrence Charles	Md.
Carpenter, Adrian Ross	D.C.
Carpenter, Dorothy Ann	D.C.
Carpenter, Dorothy Jean B.S. 1950, Maryland State Teachers College, Towson	D.C.
Carpenter, Louise Wilhelmina B.S. 1945, Howard University A.M. 1946, Columbia University	D.C.
Carpenter, Ronald Norman B.S. in Ed. 1954, Pennsylvania State Teachers College, Slippery Rock	Pa.
Carpenter, Simon Laurence A.B. 1952, University of Virginia	Va.
Carpenter, William Otis A.B. 1950, The George Washington University	Va.
Carr, Edward Rutledge	Va.
Carr, Eugene Edmund A.B. 1952, University of Utah	Utah
Carr, Foster C.	Va.
Carr, John William	N.C.
Carr, William Edward A.B. 1941, Drew University M.S. 1956, Howard University	D.C.
Carr, William Ellsworth	Md.
Carrell, Beverly Newton B.S. 1933, D.C. Teachers College A.M. in Ed. 1938, The George Washington University	D.C.
Carrera, Anna Ferreira B.S. 1951, University of Rhode Island	R.I.
Carrese, Louis M. A.B. 1951, A.M. 1953, University of Rochester	Md.
Carrier, Maria Lozupone	Va.
Carriker, Alvin Wendell A.B. 1953, Nebraska Weslean University	Nebr.
Carrillo, Nestor LL.B. 1942, University of Havana, Cuba	D.C.
Carrington, Raymond Allen	Md.
Carroll, Anne Loretta	Idaho
Carroll, Catherine Rawlings	D.C.
Carroll, Dennis Peter, Jr. B.S. 1955, University of Maryland	Md.
Carroll, Douglas Frederick	Md.
Carroll, Ewing Whitfield, Jr.	Fla.
Carroll, Joseph Louis B.S. in M.E. 1953, Swarthmore College	Va.
Carroll, Richard Lynn	Va.
Carson, Daniel Arthur	D.C.
Carson, Dorothy Ann	Md.
Carson, Mary A.B. 1929, University of New Hampshire A.M. 1957 (C.G.S.), The George Washington University	Va.
Carteaux, Virginia Louise	Ind.
Carter, Alan Bruce	Va.
Carter, Albert LeRoy B.S. in A.T.E. 1951, Purdue University	Va.
Carter, Audra Maxine	Calif.
Carter, Betty Jean	Md.
Carter, David Eugene	Md.
Carter, Dorothy Gales B.S. 1940, D.C. Teachers College	D.C.
Carter, Eleanor Hotchkiss	Va.
Carter, Elise Barnhill B.S. 1949, Florida State University	Va.
Carter, Emma Manning A.B. 1935, Howard University	D.C.
Carter, Eugene Allen B.S. 1939, Upper Iowa University	Wis.
Carter, Myrtle Helen	Va.
Carter, N. Ray	Ind.

Carter, Robert Irving A.B. 1948, The George Washington University	Va.
Carter, Robert Lee A.B. 1955, Washington and Jefferson College	W.Va.
Carter, Robert Lyman B.S. 1952, Temple University A.M. 1956, The George Washington University	D.C.
Carter, Thelma May	Va.
Carter, Virginia Morgan	Va.
Carter, William Douglas	Va.
Carter, William Kay	Calif.
Carter, Winfred Otis B.S. 1953, University of Maryland	Md.
Cartmill, Helen E.	Texas
Cartwright, Phyllis Adair B.S. 1951, College of William and Mary	D.C.
Cartwright, William Terry	Ind.
Carvellas, Georgia Nan	D.C.
Carvellas, Perry B.S. 1952, The George Washington University	Ill.
Carver, James Iverson II	W.Va.
Carver, Oliver Thomas B.S. in E.E. 1949, West Virginia University	Va.
Carver, Roy Edmond	Mich.
Cary, Ruth Coolidge	Va.
Casale, Thomas Demmien	Pa.
Casares Francis Anthony	D.C.
Case, Arnold Lowell A.B. 1956, Yale University	Va.
Case, Jane Marie	D.C.
Case, Mary Alice	Md.
Case, Raymond Harlan B.S. 1951, University of Minnesota	Md.
Case, Ronald Leon	Va.
Casey, Annie Lottie	D.C.
Casey, John Francis A.B. 1949, University of Virginia	Va.
Casey, John Manning	D.C.
Casey, John Wells	D.C.
Casey, Margaret Mary A.B. 1930, Seton University Ed.M. 1935, Rhode Island College of Education A.M. 1946, Middlebury College	Md.
Cashman, John Franklin	Pa.
Caslin, James Michael LL.B. 1950, The George Washington University LL.M. 1953, National University	Md.
Caso, Julius J.	N.J.
Casper, Barry Howard	D.C.
Casper, Morris Herbert	D.C.
Cass, Alice Miriam	Md.
Cass, Miriam	D.C.
Cass, Nathan B.E.E. 1952, New York University LL.B. 1956, The George Washington University	Md.
Cassady, Matthew F., Jr. B.B.A. 1953, University of Pittsburgh	Pa.
Cassarino, Sebastian James B.S. in Ch.E. 1943, Northeastern University	D.C.
Cassell, Sanford Charles B.S. in C.E. 1952, University of Maryland	Va.
Cassidy, Carmel Martha A.B. 1956, The George Washington University	D.C.
Cassidy, Hugh Truman	D.C.
Cassidy, John Robert B.S. in I.E. 1953, Pennsylvania Military College	Va.
Cassidy, John Walsh	D.C.
Cassidy, Thomas Kohler B.S. 1953, University of Wyoming	Wyo.
Castagna, Selma Bessie A.B. 1948, Union College	Pa.
Castell, Donald Overton	Md.
Castillo, Martha	Md.
Castronovo, Felicia May	D.C.
Catchim, Jerome Douglas A.B. 1953, Abilene Christian College	Va.
Cate, Christine	Va.
Cate, Robert Louis	D.C.
Cathers, Lincoln Drury B.S. 1956, Webb Institute of Naval Architecture	N.Y.
Cato, Willie Guymon, Jr.	Md.
Catoe, Sondra Reedy	Va.
Caton, Helene Vinson A.B. 1935, Marshall College	D.C.
Catterton, Edward Lee	D.C.
Cauffman, James Alan B.E.E. 1956, The George Washington University	D.C.
Caufield, Berta Smith	Va.
Caumont, Audran Francis B.S. in E.E. 1947, New York University	Va.
Caun, Peter Michael B.S. in I.E. 1957, University of Pittsburgh	Pa.
Caune, Anita	D.C.
Causey, Norman Michael	D.C.
Cavallo, Guido Anthony A.B. 1950, The George Washington University	Va.
Cavanaugh, Donald Joseph	R.I.
Cavanaugh, Francis Xavier A.B. 1954, Northeastern University	D.C.
Cavanaugh, George Francis, Jr. B.S. in C.E. 1956, Northeastern University	Mass.
Cavanaugh, Mary Frances	Va.
Cave, Charles Lee	D.C.
Cave, James Winford B.S. in E.E. 1957, Purdue University	D.C.
Cavin, Julia Flory	Wis.
Cebollero, Manuel B.M.E. 1954, The George Washington University	Md.
Ceccarelli, Joyce Anne	D.C.
Cecil, Howard Eugene	Ohio
Celenza, Josephine Mary	D.C.
Celtnieks, Aija	D.C.
Centola, David Daniel B.S. 1949, Fordham University	Md.
Ceremsak, Robert Joseph A.B. 1956, Catholic University of America	D.C.
Cerick, Peter Aull A.B. 1953, The George Washington University	D.C.
Cerny, Matthew John, Jr. A.B. 1954, Johns Hopkins University	N.Y.
Cerrone, Warren Edward	N.Y.
Chabon, Robert Selwyn	D.C.
Chaconas, Pete Nicholas	Md.
Chad, Seymour Walter A.B. 1948, University of California at Los Angeles	Md.
Chaddock, Marilyn Anita	Calif.
Chagnon, Leon Euclid Ashley	D.C.

Chaikin, Richard Wilkes	Mass.
Chaimowicz, Devora	D.C.
Chalmers, George Young	D.C.
A.B. in B.A. 1956, Antioch College	
Chamberlain, John	N.Y.
A.B. 1957, University of South Carolina	
Chamberlain, Margaret Mary	Md.
Chamberlain, Milton Kay	W.Va.
A.B. 1957, West Virginia University	
Chamberlin, Carlton Eugene	Va.
A.B. 1954, University of New Hampshire	
Chambers, Catherine Jeanette	Md.
Chambers, Clyde Frank, Jr.	Md.
Chambers, Rita Ann	Va.
Chambers, Victor Alan, Jr.	N.Y.
Chambers, Winn Irwin	Pa.
Chamblin, Larry Neil	Va.
Champagny, Donald Alcide	R.I.
A.B. 1954, Providence College	
Champlain, Hollis DeWitt, Jr.	Va.
B.S. 1953, U. S. Merchant Marine Academy	
Chan, Cho Yee	D.C.
Chan, Saifook	Malaya
Chan, Tong Wang	D.C.
Chan, Toy Ping	D.C.
Chan, Trinh Van	D.C.
Chan, William Kin Wai	D.C.
Chanaud, Norman Pierre	Md.
Chander, Partap	D.C.
B.S. 1955, City College of Calcutta, India	
Chandler, George Cheston	Md.
B.S., M.S. 1949, University of Tennessee	
Chandler, Gladstone Leon	D.C.
B.S. 1952, Hampton Institute	
Chandler, John Winthrop	Md.
B.S. 1944, Worcester Institute of Technology	
Chandler, Mark Luther, Jr.	Tenn.
A.B. 1949, Howard College	
Chaney, Edward Eugene	Md.
Chang, Angela Marie	D.C.
Chang, Annie Shu-Chun	China
Chang, Eugene Yen-Ching	D.C.
Chang, Jennie Su	Va.
Chang, Laura Izu-Hseng	China
A.B. 1957, Jaiwas Normal University	
Chang, Lucy Gi-Ding	D.C.
Changaris, Christopher Stephen	Fla.
B.S. 1945, U. S. Coast Guard Academy	
Chapin, Karin Marie	N.D.
Chapman, Ann Eleanor	D.C.
Chapman, George Elmer, Jr.	Va.
A.B. 1957, University of Richmond	
Chapman, John Leonard	D.C.
Chapman, Katheryn Dawsey	Md.
A.B. 1941, The George Washington University	
Chapman, Margaret Wells	Texas
B.S. 1942, John Brown University	
Chapman, Paul Vincent	Pa.
Chappelear, James Allen	Md.
Chappelear, Nancy	D.C.
B.S. 1939, Madison College	
Chappell, Beatrice Marshall	D.C.
Chappell, Joyce Joan	Nebr.
B.S. 1957, Columbia University	
Chappell, Lucius Henry	Va.
B.S. 1927, U. S. Naval Academy	
Chappelle, William David	S.C.
Chappuis, Cyril K.	Ohio
B.S. in E.E. 1928, Tri-State College	
Charkatz, Harry Marvin	Md.
Charkatz, Warren	N.Y.
B.B.A. 1957, College of the City of New York	
Charles, Gladys Lumpkins	Va.
B.S. 1933, Bluefield State Teachers College	
Charlesworth, George Herbert	Md.
A.B. 1938, Houghton College	
A.M. 1947, University of California at Los Angeles	
Charlton, Walter Theodore	Md.
B.S. 1952, University of Maryland	
Charney, Joel Bernard	D.C.
Charnley, Phyllis Ann	Va.
Chase, Caroline Cross	Mass.
A.B. 1941, Wellesley College	
Chase, Charles John	Md.
Chase, Gordon	Mass.
A.B. 1954, Harvard University	
Chase, Robin Holman	D.C.
A.B. 1955, Wellesley College	
Chase, Stephen Edward	Md.
Chasey, Paul Harry	Va.
Chaternuck, Pauline	D.C.
Chatoor, Ramcoomair	D.C.
Chatrnuck, Mary Lee	W.Va.
Chatrnuck, Stephen	Va.
Chaturabong, Chalerm	Thailand
Chaudry, Roshan Lal	D.C.
B.S. 1947, A.M. 1950, Government College, India	
Chauncey, Marion Katherine	Ga.
B.Mus. 1926, Ithaca College, N. Y.	
A.M. 1933, Columbia University	
Chavez, Wenceslon Ross	Md.
B.B.A. 1949, University of New Mexico	
Chavis, Catherine Brice	D.C.
B.S. 1941, D. C. Teachers College	
A.M. 1949, New York University	
Cheatham, Pamela	Pa.
A.B. 1953, Smith College	
Cheek, Priscilla Ann	Va.
Cheles, Peter John	Ill.
Cheng, Hang Sheng	D.C.
A.B. 1948, Tsing Hwa University, China	
A.M. 1953, The George Washington University	
Chennault, Claire Lee	N.Y.
Cherner, Helen Ruth	D.C.
Chernock, Irene Ruth	Va.
Cherrix, Charles Baynard	Md.
B.S. 1956, U. S. Merchant Marine Academy	
Cherry, Charles Turner	Md.
Chesanek, Joseph Andrew	Fla.
Chesis, Sheldon	N.Y.
B.M.E. 1956, College of the City of New York	
Chesney, Daniel Roger	D.C.
Chess, Cynthia Hooper	Va.
Chesto, Lawrence Frank	Conn.
Cheston, John Finley	Md.
Chevalier, Helen Werner	D.C.
Chevrier, Jean Claude Jacques	Md.
Chew, Mun Kwong Robert	D.C.
Chiames, Marina George	Ill.
Chick, Lewis Winston	Va.
B.S. in B.A. 1940, University of Southern California	

Chicosky, Donald Mavin Md.
  A.B. 1957, Centenary College
Chidester, Annabelle Md.
Chilcote, Olga Diane W.Va.
Child, Jean Elizabeth D.C.
Childress, George Herman Okla.
  B.S. 1952, Oklahoma Agricultural
    and Mechanical College
Childress, Richard Harvey Ill.
  B.S. 1954, U. S. Naval Academy
Chiles, Earl Nevette Va.
  A.B. 1942, Virginia Military Institute
Chilton, Arthur Broadus D.C.
Chilton, Ralph Henry Ohio
  B.S. in M.E. 1952, Purdue University
Chin, Gay Va.
  B.S. in M.E. 1946, Oregon State College
Chin, Jack D.C.
  B.S. 1951, St. Mary's University
    of San Antonio
Chin, Wah Geung Va.
  B.S. 1939, Pennsylvania Military
    College
Chipouras, Elaine Mary D.C.
Chirls, Irving Allen N.J.
  A.B. 1947, Harvard University
Chisholm, John Thomas D.C.
Chisholm, Robert Frippe Va.
  B.S. in E.E. 1930, Georgia Institute
    of Technology
Chloupek, Lawrence Albert Va.
Choate, Anna R. D.C.
  B.Mus. 1945, M.Mus. 1954, University
    of Michigan
Choatilekha, Panlop D.C.
  LL.B. 1954, University of Thammasat,
    Thailand
Chodakowska, Wanda Maria Poland
  Master of Laws 1957, Warsaw
    University
Choi, Suk Hong Korea
Choon-ngarm, Prasert Thailand
  B.S. 1941, Thai Naval Academy,
    Thailand
  LL.B. 1951, University of Thammasat,
    Thailand
Chotiner, Allan Isadore Md.
  A.B. 1937, Pennsylvania State
    University
  Ed.M. 1941, University of Pittsburgh
Chow, Yuh-Hwei China
Chramiec, Mark Andrew Va.
  B.S. 1957, Virginia Polytechnic
    Institute
Christ, Christ Va.
  A.B. 1948, A.M. 1953, Middlebury
    College
Christensen, Carl Arnold D.C.
Christensen, Ellen Elizabeth D.C.
Christensen, Gerald Leo Idaho
  A.B. 1955, University of Idaho
Christensen, Walter Clyde Va.
  B.M.E. 1955, Georgia Institute of
    Technology
Christensen, William Hammond Nebr.
  B.S. 1936, University of Nebraska
Christenson, Gordon Va.
  B.S.L. 1955, LL.B. 1956, University
    of Utah
Christian, Peggy Percival D.C.
Christiana, Donald Oliver Va.
  B.S. 1957, St. Lawrence University
Christiana, Gilbert Philip Va.

Christie, Peter Md.
Christie, Robert Charles Mass.
Christou, Alexander George Md.
Christrup, Helen Jeanne Va.
  A.B. 1949, University of Missouri
  B.S. 1951, Washington University
Chromicz, William I. Va.
Chronstrom, Clifford Carl Md.
Chu, Yao Tsu China
  B.S. in Ed. 1939, Central Political
    Institute, China
Chuchinda, Prasong Thailand
Chufar, Gene P. Ohio
  A.B. 1952, Ohio University
Chung, Chang Hwa Korea
  A.B. 1952, Korea University
Chung, Inbo Korea
Chung, In Sook D.C.
Church, Betty Cranford Va.
  A.B. 1953, Mary Washington College
Church, James Patterson Md.
Church, Lawrence Brehaut Va.
Church, Lloyd Eugene Md.
  A.B. 1942, West Virginia University
  D.D.S. 1944, University of Maryland
  M.S. 1951, The George Washington
    University
Church, Maury Curtis Va.
Cianciotto, Andrew Md.
  B.S. in Ind. Arts 1953, Pennsylvania
    State Teachers College, California
Ciardi, Joseph Emile Mass.
  A.B. 1956, Boston University
Ciarlo, Louis Angelo N.J.
Cibinic, John, Jr. Va.
  A.B. 1956, University of Pittsburgh
Cilenti, Kamurau Turkey
Cilento, Richard Charles N.J.
Cindea, Traian D.C.
Cinelli, Thomas Ottavio, Jr. N.J.
Cingel, Frank Joseph Md.
  B.S. in M.E. 1957, Pennsylvania State
    University
Ciriello, Lucy Ann D.C.
Citrenbaum, Lewis Albert D.C.
Citro, Marjorie Marie N.J.
Claeys, Joseph Vincent Va.
  B.E.E. 1951, LL.B. 1955, University
    of Detroit
Claggett, Allison Hughes Md.
  B.S. 1941, Maryland State Teachers
    College
Claiborn, Harold Glen Md.
Clainos, Mary Pauline N.Y.
Clanson, Donald E. D.C.
  B.S. 1952, Pennsylvania State
    University
Clarizio, Salvatore Michael Conn.
Clark, Allan Mark Va.
  A.B. 1948, Bowdoin College
  A.M. 1956, University of Pennsylvania
Clark, Alphus Richard Oreg.
Clark, Anne Marie D.C.
Clark, Antoinette Va.
Clark, Antoinette Evans Pa.
Clark, Barry Loomis Ill.
  B.S. in M.E. 1956, Northwestern
    University
Clark, Bette Joyce Va.
Clark, Don Campbell Ohio
  B.S. 1955, Oregon State College
Clark, Edna Joyce Md.
Clark, Elizabeth Ruggles Del.

Clark, Frankie Cochran Md.
B.S. 1938, Texas State College for Women
Ed.M. 1953, University of Maryland
Clark, Irene Mitchell Va.
Clark, James Harry Va.
Clark, James Salisbury Md.
A.B. 1951, A.M. 1952, New York State College for Teachers, Albany
Clark, Malcolm Cameron D.C.
A.B. 1953, The George Washington University
Clark, Michael John Pa.
Clark, Nancy D.C.
Clark, Patrick Edwin Md.
Clark, Philip Mark D.C.
Clark, Victoria Chaapel D.C.
B.S. 1929, Columbia University
Clark, Violet Va.
Clark, Wiley Md.
Clark, William Roger Ill.
B.S. 1954, Illinois Wesleyan University
Clark, William Ross, Jr. Va.
Clarke, Malcolm Douglas Va.
LL.B. 1955, American University
Clarke, Paul Frederick Md.
Clarke, William Norman D.C.
B.S. 1956, University of Pennsylvania
Clarken, James Carroll D.C.
A.B. 1948, Loyola College
Clarkson, Elisabeth Pierce Va.
Clary, Peter White, Jr. Md.
Claster, Linda May Pa.
Clatterbuck, Dean Suter D.C.
Claude, Bettie Lee D.C.
Clavean, MarieLouise Laure France
Clay, John Peter Calif.
A.B. 1956, Occidental College
Clay, William Holmes Md.
B.S. 1951, Wake Forest College
Clayman, Lee Heiman Ohio
Claypool, Richard Clayton D.C.
Clayton, Stanley Rufus Ill.
Cleary, John Hubert Va.
Cleary, Joyce Marie Va.
B.S. in Ed. 1956, D. C. Teachers College
Clement, Mildred Davis D.C.
A.B. 1938, New Jersey State Teachers College
A.M. 1950, Texas Christian University
Clement, William Stockton Md.
Clements, Lucille K. Oreg.
B.S. 1957, Georgetown University
Clements, Sandra Jean Md.
Clemons, Ormond Leslie Va.
Cleveland, Audrey Hope N.J.
Cleveland, Jack Alva Va.
Cleveland, Sally Zyra D.C.
A.B. 1944, New York University
Cleven, Gale Winston N.M.
A.B. 1946, M.B.A. 1949, University of Wyoming
A.M. 1956, Harvard University
Clevenger, Robert William Pa.
A.B. 1956, Duke University
Clifton, Jonas N.Y.
Clifton, Noel Samuel Va.
B.S. in Comm. 1952, University of Virginia
Clinch, William Bogert Va.
A.B. 1950, Yale University
LL.B. 1957, The George Washington University
Cline, Barbara Holden Mass.

Clingenpeel, Calvert Hoff Va.
Clipper, Lawrence Jon Va.
A.B. 1953, Brown University
Clive, Donald D.C.
Clokey, Mitchell Chase Md.
Close, David Olaf Va.
A.B. in Govt. 1952, The George Washington University
Clouden, George Kenneth D.C.
Clough, Clinton George, Jr. Md.
A.B. 1953, Brown University
Clough, John David Md.
Clouse, Peter Glenn Allen Ind.
Clover, Mary Louise Md.
Clyburn, Charles Lewis Va.
Coad, Robert Dean Colo.
Coahran, Margaret Matchett Pa.
A.B. 1954, Earlham College
Coates, Mary Alice Md.
Cobb, Alan Elmer D.C.
B.S. 1954, Bowling Green State University
Cobb, Charles David N.C.
A.B. 1938, A.M. 1946, East Carolina College
Cobb, Chloe Jean Pa.
Cobb, Edwin Louis Miss.
A.B. 1954, Delta State College
Cobb, Lois Jane Pa.
Cobos, Bolivar M. D.C.
Coburn, George Headley Md.
Coburn, Mildred Frances D.C.
Cochran, Howe Preston, Jr. Md.
B.S.E. 1948, Columbia University
Cochran, John Lamar, Jr. Va.
B.S. 1942, Georgia Institute of Technology
Cochran, Margaret Baker Md.
Cochrane, Edward Francis Va.
Cockfield, James Edward D.C.
B.Pet.Eng., M.S. 1953, Ohio State University
Cockrill, Mary Catherine Va.
B.S. Ed. 1951, Madison College
Cocozza, Richard Anthony Mass.
A.B. 1954, Merrimack College
Codel, Nancy D.C.
Codon, Iryne Calif.
A.B. 1950, Stanford University
Coe, Charles Hayward Va.
Cofer, Joseph Lewis Va.
B.S. 1949, West Virginia Institute of Technology
Coffee, John Maurice Va.
B.E.E. 1952, Georgia Institute of Technology
Coffey, Robert Alan D.C.
B.S. 1955, Montana State College
Coffin, Ralph Breckenridge Va.
Coffman, Edgar Donald Va.
A.B. 1953, Western Maryland College
Cogan, Joy Lee D.C.
Coggeshall, Myrtle Edith Ill.
Coggeshall, Robert Walden D.C.
B.S. in Ed. 1932, University of South Carolina
Cogswell, William Neitzley, Jr. Va.
Cohan, Allan Barry D.C.
A.B. 1957, The George Washington University
Cohan, Elizabeth Curry D.C.
A.B. 1946, Greensboro College
A.M. in Ed. 1948, University of North Carolina

Cohan, Esther Ruth D.C.
Cohan, Marcia Harriett D.C.
Cohen, Allen Barry Md.
Cohen, Audrey Cohen Pa.
A.B. 1953, University of Pittsburgh
Cohen, Elaine D.C.
Cohen, Gerald Md.
Cohen, Howard Melvin D.C.
Cohen, Iris Md.
Cohen, Joan Rozansky D.C.
Cohen, Martin Irwin D.C.
Cohen, Melvin D.C.
B.S. 1948, Virginia Polytechnic Institute
Cohen, Morris D.C.
A.B. in Govt. 1949, The George Washington University
Cohen, Norman Sonny D.C.
Cohen, Raymond Pa.
Cohen, Richard Edward Va.
Cohen, Rita Rycelle Md.
Cohen, Robert Ga.
Cohen, Stanley Howard Pa.
B.S. 1957, Drexel Institute of Technology
Cohen, William D.C.
A.B. 1940, Brooklyn College
A.M. 1947, The George Washington University
Cohn, Stephen Michael D.C.
Cohn, Victor Hugo, Jr. Md.
B.S. 1952, Lehigh University
A.M. 1954, Harvard University
Coiner, Julia Edith Md.
B.S. 1944, D. C. Teachers College
Cokely, John Kenneth Mo.
A.B. 1957, William Jewell College
Colaianni, Joseph Vincent Mich.
B.E.E. 1956, University of Detroit
Colan, Albert Ronald, Jr. Va.
Colbert, Joan Hull D.C.
Colby, James Wilson Vt.
B.S. in C.E. 1957, Norwich University
Coldwell, Rufus Green, Jr. Va.
Cole, Ann Sammons Okla.
Cole, Austin Palmer Iowa
A.B. 1956, University of South Dakota
Cole, Charles Ackerson Calif.
B.S. 1945, Ohio State University
Cole, David Aaron N.Y.
Cole, Diane Sue D.C.
Cole, Donald William Va.
A.B. 1950, University of Illinois
M.B.A. 1957, The George Washington University
Cole, Dorothy Volker Va.
Cole, Earle Mark Texas
B.S. 1957, University of Maryland
Cole, James Edwards, Jr. Md.
Cole, Lynnelle Ardyce D.C.
Cole, Roosevelt Ala.
A.B. 1955, Miles College
Cole, Sherwood Allan N.Y.
A.B. 1956, University of Buffalo
Cole, Thomas Ernest N.Y.
A.B. 1954, Colgate University
Coleman, Barbara Joan D.C.
A.B. 1957, Columbia University
Coleman, Beverly Mosby Va.
B.S. 1922, U. S. Naval Academy
LL.B. 1928, LL.M. 1957, The George Washington University
Coleman, Bobby Eugene Ga.

Coleman, Ernestine Daisy Md.
Coleman, Frank Peter Pa.
Coleman, Margaret E. Ark.
Coleman, Thomas Winslow Va.
Coles, Lily Mae D.C.
Coll, Robert Wilson D.C.
A.B. 1952, The George Washington University
Collier, Jack Wayne Va.
B.S. 1954, The George Washington University
Collier, John William, Jr. Va.
Collier, Ruth Ella Md.
B.S. 1955, Maryland State Teachers College, Frostburg
Collings, Mary Louise Va.
A.B. 1925, Wesleyan College
A.M. in Ed. 1926, Northwestern University
Collins, Annie Ruth Md.
A.B. 1947, Morgan State College
Collins, Betty Gwendolyn D.C.
Collins, Charles Richard Md.
A.B. 1956, Southwestern State College
Collins, Dwight Marshall, Jr. Md.
Collins, Edgar Grayson N.C.
Collins, Edward Francis D.C.
Collins, Esther Charlene D.C.
Collins, Francis Patrick Md.
B.S. 1950, Georgetown University
Collins, George Caesar D.C.
Collins, John Duren III N.C.
A.B. 1943, Wake Forest College
Collins, John James, Jr. N.J.
Collins, John Joseph Va.
A.B. 1949, University of Missouri
A.M. 1950, University of Georgia
Collins, Martha Louise D.C.
Collins, Muriel Inez D.C.
B.S. in Ed. 1940, A.M. 1950, New York University
Collins, Richard Joseph Mich.
Collins, Robert Rufus Va.
Collins, Robert Terrance Va.
B.S. in E.E. 1953, University of Missouri
Collins, Samuel James Md.
B.E.E. 1951, The George Washington University
Collins, Talbott Ferdinand Ill.
B.S. 1940, U. S. Naval Academy
Collins, Theodore Crabill D.C.
Collins, Veronica May Va.
Collins, William Goebbel, Jr. Va.
Collom, Vance Ralph, Jr. Va.
Colmey, Thomas Grosvenor Ill.
A.B. 1957 Duke University
Colna, Theodore Paul Pa.
Colquitt, Carlton Black, Jr. Ga.
Colson, Charles Wendell Va.
A.B. 1953, Brown University
Colton, Carolyn Mensh D.C.
Coltrane, Helen Eaton Md.
A.B. 1953, High Point College
Combs, Cecil Edward Va.
B.S. 1936, U. S. Military Acamedy
Combs, Henry Md.
Combs, Margaret Rose Md.
Combs, Maudelle Pearson Md.
A.B. 1927, Southern Methodist University
Combs, Michael Francis Md.

Combs, William Edward	Md.
Comport, Audrey Ruth	Va.
Compton, Jack Kyle	Va.
Compton, Norma H.	Va.
A.B. 1950, The George Washington University	
M.S. 1957, University of Maryland	
Compton, Ruth Mary	Texas
A.B. 1952, Texas State College for Women	
A.M. 1956, George Peabody College for Teachers	
Compton, William Lee	D.C.
Conant, William Wickes	D.C.
Conde, Eduardo Braga	Portugal
Condeelis, Demetrios	N.Y.
Condon, Robert Potter	Va.
A.B. 1954, University of Washington	
Cone, Carol Finch	Ill.
A.B. 1954, A.M. 1956, University of Illinois	
Cone, Sandra Laverne	Va.
Conger, Harriet Myers	Va.
A.B. 1939, Smith College	
Conlin, Michael Manuel	Md.
Conlogue, Mary Louise	Va.
Conlon, Arthur James	D.C.
Conlon, James Francis	Ill.
A.B. 1951, New Mexico Highlands University	
Conlon, Michael James	Md.
B.S. 1949, Georgetown University	
Conn, Judith Winslow	Va.
Conn, Solomon Jackson	Ind.
Connaughton, John Hamilton, Jr.	Va.
Connealy, Ann Margaret	Va.
Connell, Gene McCain	Va.
Connell, Joseph Edward	N.Y.
A.B. 1954, Antioch College	
Connell, Mary Jane	D.C.
A.B. 1951, Grinnell College	
Conner, John Minor	Mo.
Conner, Kurt Rickey	N.C.
A.B. 1958, Guilford College	
Connolly, Anne Joan	D.C.
B.S. 1934, College Misericordia	
Connolly, Charles Thomas	Md.
Connolly, Daniel	Md.
Connolly, Kevin Robert	Pa.
Connor, Joan Webster	D.C.
A.B. 1955, Kent State University	
Connor, Joanne Marie	Md.
Connor, Paul Phillips	D.C.
B.S. in E.E. 1955, Case Institute of Technology	
Connor, Rosemary	Va.
B.S. 1939, San Diego State College	
Connor, Thomas Henry	Md.
Conques, Lawrence	La.
B.S. 1955, University of Maryland	
Conrad, Benjamin Franklin	Md.
B.S. 1947, Dickinson College	
Conrad, John Henry	Md.
Conrad, Justin Lyle	N.D.
A.B. 1957, Northwestern University	
Conrad, Patricia Finley	Pa.
Conrad, Ray Willard	Pa.
Conrad, Voris Ray	Va.
Conrod, Thomas Albert	N.Y.
A.B. 1957, Hofstra College	
Conroy, Edward Alfred, Jr.	D.C.
B.S. 1942, Queens College	
M.S. 1943, Ph.D. 1946, Pennsylvania State University	
Conroy, Shirley Burns	Va.
B.S. in Ed. 1946, Ohio University	
Considine, William Henry	N.Y.
Consolvo, Charles Willard, Jr.	Va.
Constable, Peter Dalton	N.Y.
A.B. 1953, Hamilton College	
A.M. 1957, Johns Hopkins University	
Constantinople, Anne Patricia	D.C.
Conte, Albert Vincent	Md.
Contee, LeRoy Elmer	Md.
B.S. 1949, Maryland State Teachers College	
Contis, George Peter	Pa.
A.B. 1954, University of Pittsburgh	
Convers, Fabio Antonio	Colombia
Conway, John A.	Md.
A.B. 1942, Manhattan College	
Conway, John Thomas	Va.
A.B. 1943, University of Minnesota	
Conway, Neal John	Md.
B.S. 1953, Georgetown University	
Coogan, John Michael	D.C.
B.S. 1953, University of Washington	
Cook, Albert George III	Va.
A.B. 1957, The George Washington University	
Cook, Anne I.	D.C.
A.B. 1942, Hunter College	
Cook, Charles William	D.C.
A.B. 1956, Western Maryland College	
Cook, Frances Rowena	D.C.
A.B. 1952, The George Washington University	
Cook, Frederick Humphrey Daniel	Va.
Cook, Gayle Frances	Va.
Cook, George Robert	Mich.
A.B. 1956, Hope College	
Cook, Helen Acker	D.C.
A.B. 1957, The George Washington University	
Cook, Jo Ann	S.C.
Cook, John Norris	W.Va.
Cook, Joseph Allen	Md.
A.B. 1953, University of Maryland	
Cook, Leslie Charles	Colo.
Cook, Marylou Bernard	Va.
Cook, Richard Kelsey	N.Y.
Cook, Walter Edward	Texas
Cooke, Joseph Allan	Pa.
B.S. in C.E. 1957, Drexel Institute Of Technology	
Cooke, Milton William	Va.
Cooke, Raymond Kenneth	Va.
B.S. 1957, University of Maryland	
Coombs, Wade Hampton	D.C.
Cooper, Arthur Gerald	N.Y.
Cooper, Bernard Raymond	Pa.
B.S. in E.E. 1956, Carnegie Institute of Technology	
Cooper, Bert Hubert, Jr.	S.C.
A.B. 1956, Furman University	
Cooper, Burnett Z.	Md.
B.S. 1940, New Jersey State Teachers College, Glassboro	
Ed.M. 1943, Temple University	
Cooper, Caroline Esther	D.C.
B.S. in N.E. 1956, University of Maryland	
Cooper, Charles Gerson	N.J.
B.S. 1954, Rutgers University	
Cooper, Earl Dana	Va.
B.E.E. 1948, The George Washington University	
Cooper, Evelyn M.	D.C.

Cooper, George Madison Va.
B.S. 1957, Pennsylvania State University
Cooper, Gertrude Vivian Va.
B.S. 1937, A.M. 1948, Columbia University
Cooper, Grover Collins Va.
A.B. 1952, Ohio Wesleyan University
Cooper, Henry Charles D.C.
A.B. 1956, University of Maryland
Cooper, Jessie Van Metre D.C.
A.B. 1934, Dakota Wesleyan University
A.M. 1940, University of Denver
Cooper, Mattie Augusta Va.
A.B. 1927, Mississippi State College for Women
Cooper, Nell Weaver Va.
Cooper, Phyllis Deming D.C.
Cooper, Richard Clarence Va.
Cooper, Ruth Elaine Ala.
Cooper, Talmadge DeWitt Utah
B.S. 1940, Utah State Agricultural College
Cooper, Yvonne Miller Va.
Cope, Graham Dickinson Ga.
Copeland, Alfred Va.
B.C.E. 1946, The George Washington University
A.M. 1957, American University
Copeland, W.A. Okla.
A.B. 1956, University of Oklahoma
Coplein, Gordon David N.J.
B.S. in E.E. 1956, University of Pennsylvania
Coppel, Marcia Elaine D.C.
Coppens, Charles Robert D.C.
Copperthite, Andrew John, Jr. D.C.
Coppola, Peter Benjamin D.C.
Copsey, Jesse Fabian Md.
Corbett, Howard Roger, Jr. Va.
B.S. in E.E. 1951, Duke University
Corbin, John Kenneth Va.
B.S. 1954, Wake Forest College
M.S. 1956, Clemson Agricultural College
Corbus, William Rudolph Calif.
A.B. 1955, Brown University
Corby, Louisa Ann W.Va.
Corcoran, Virginia Sandra D.C.
Cordaro, Louis James N.Y.
Cordero, Anne Deing D.C.
A.M. 1957, University of Florida
Cordova, Harold Philip Md.
Corens, Robert Frederick D.C.
Corey, Alexander N.Y.
A.B. 1928, Harvard University
Corey, Louise Ruth D.C.
Mus.B. 1956, Eastman School of Music
Corish, William Sinclair Va.
Corley, Kelly Ozelle Va.
B.S. 1955, Mississippi College
Cormeny, Jon Meredith Md.
Cornbrooks, James Ernest Va.
B.S. 1950, Florida State University
Cornelius, Gerald Keith Va.
Cornell, Ronald S. N.Y.
B.S. 1956, Queens College
Cornfield, Ruth Bittler Va.
A.B. 1934, University of California at Los Angeles

Corrado, Ralph F. D.C.
B.S. 1953, D.C. Teachers College
Corrado, Rochelle Marie D.C.
A.B. 1956, D.C. Teachers College
Correl, Marilyn Mauch D.C.
A.B. 1957, University of California
Corrigan, Anne Mary Texas
B.Ed. 1955, Keene College
Corrigan, Gordon Frederick Va.
A.B. 1942, University of Toronto
Corson, Elizabeth Louise N.J.
Cortes, Matos Roberto Puerto Rico
A.B. 1956, Polytechnic Institute of Puerto Rico
Cortner, Dixie Ann D.C.
Cory, Donald Martin Ill.
Cosby, Elizabeth Martin Va.
Cosco, Gerald Anthony N.Y.
Coslowe, Benjamin Peter D.C.
Cosme, Cruz Pedro Juan D.C.
Costa, Augusta Louise Carrel D.C.
A.B. 1932, Judson College
Costa, Ronaldo Brazil
LL.B. 1952, Catholic University Law School, Brazil
Costakis, Ann D.C.
Costello, Elmer Price Va.
A.B. 1949, Marshall College
Costello, Jane Stuart Wyo.
Costello, Roger Joseph Va.
A.B. 1948, University of Cincinnati
M.B.A. 1951, Harvard University
Costinett, John Henry, Jr. Md.
B.C.E. 1957, The George Washington University
Coston, Wayland Kerbow Md.
B.S. 1941, East Texas State Teachers College
Cotter, George Roland Md.
Cotter, Thomas Raymond N.Y.
A.B. 1951, St. Bonaventure University
Cottman, Georganna Showell Md.
B.S. 1950, Morgan State College
Cotton, Donna Lillian Va.
A.B. 1953, University of Maryland
Cotton, Rebecca Anne D.C.
A.B. 1954, The George Washington University
Cotton, Simeon Henry, Jr. Va.
A.B. in E.E. 1957, Duke University
Cottrell, Alfred Charles Md.
B.S. 1951, University of Maryland
Coulombe, Raymond Armond Md.
B.M.E. 1948, The George Washington University
Coulson, Jack Thomas Va.
Coulter, Kenneth Brewster D.C.
A.B. 1950, Princeton University
Couly, Venus Marie D.C.
Courington, Kelley D. D.C.
Courter, Sheila Mary D.C
A.B. 1956, University of Illinois
Courtis, Phyllisann V
Courtney, James Edward M
Courtney, James H. A
B.S. 1929, Clemson Agricultural College
Courtney, Joseph Clarence III V
A.B. in Ed. 1953, The George Washington University
Coury, Alphonse Paul V

Cousins, Ruth Hubbard	Va.
Coval, Elizabeth Garver	Md.
Covel, Elizabeth Jean	Va.
Covell, Jack Phillip	Ind.
Cover, Mary Cleland	D.C.
Cowden, Stephen John	Pa.
Cowley, Irvin Jack	Utah
Cowley, Mary Lou	Mo.
Cox, Albert Wesley	Ill.
B.S. 1942, U. S. Naval Academy	
Cox, Cheryl Chere	Md.
Cox, Eleanor Dawson	Va.
Cox, Eric Frederick	D.C.
A.B. 1954, Dickinson College	
Cox, James Anthony	W. Va.
Cox, James Henry IV	Va.
Cox, Luther Christian	Md.
B.S. 1940, Maryland State Teachers College, Towson	
Cox, Marvin Rountree	Ga.
A.B. 1957, Yale University	
Cox, Mary Alexander	Va.
A.B. 1933, Shaw University	
Cox, Mary Loretta	Va.
Cox, Vernon Henry	Va.
Cox, William Edward	Va.
A.B. 1954, Bucknell University	
Coxe, Jean Scott	D.C.
B.S. 1945, Howard University	
Coxen, Edward Donald	D.C.
Coyle, James Leslie	Md.
Coyne, John Michael	Md.
Cozan, Lee William	D.C.
A.B. 1948, American University	
A.M. in Govt. 1951, The George Washington University	
Coznick, Elizabeth Mary	D.C.
Cozzarelli, James Dominick	N.J.
B.S. 1955, St. John's University	
Crabb, Carlos William	Ill.
Crabb, Richard Bruce	Pa.
A.B. 1957, Duke University	
Crabbe, Juanita Zinn	D.C.
Crabbe, William Mervin, Jr.	Conn.
A.B. 1950, The Citadel	
M.P.A. 1957, Harvard University	
Crabtree, Granville Hayward, Jr.	Va.
B.S. 1956, University of Missouri	
Crabtree, LeRoy Douglas	Va.
Crabtree, Robert Gene	Md.
Crady, Clarence William, Jr.	Va.
B.S. in P.E. 1949, University of Pittsburgh	
Craft, Charles Gardner	Va.
Crafton, Sonia Marie	D.C.
B.F.A. 1953, Temple University	
Craig, Agnes Norene	Va.
Craig, Albert Douglas Price	N.Y.
A.B. 1955, Harvard University	
Craig, Betty Ann	D.C.
Craig, Betty Lee	Va.
Craig, James Angus	Md.
Crain, Isabel Stimple	Va.
A.B. 1946, University of Redlands	
Cramer, Carl Allison	Md.
B.S. 1932, Oregon State Colege	
Cramer, Eugene Norman	Va.
B.S. 1955, Kansas State College of Agriculture and Applied Science	
Cramer, Morris Michael	Pa.
A.B. 1955, Pennsylvania State University	
Cramer, Stephen Douglas	Md.
Crandall, William Delacroix	D.C.
Crane, Michael Joseph, Jr.	Va.
Crane, Rebecca Ruhl	D.C.
A.B. 1915,Goucher College	
Crank, Terrel Harvey	Va.
A.B. 1953, The George Washington University	
Crankshaw, Harold George	Md.
B.S. 1928, Carnegie Institute of Technology	
A.M. 1932, Cornell University	
Crasanakis, George John	Pa.
B.S. 1950, University of Pittsburgh	
Craven, Adam Page	W.Va.
A.B. 1949, Storer College	
Craven, Doris Lee	Md.
B.S. 1954, Wake Forest College	
Craven, John Pinna	Va.
B.S. in C.E. 1946, Cornell University	
M.S. in C.E. 1947, California Institute of Technology	
Ph.D. 1951, University of Iowa	
Craven, William Kyler	Ga.
Crawford, Clayton Eugene	W.Va.
A.B. 1937, West Virginia Institute of Technology	
A.M. 1949, Marshall College	
Crawford, Henry Butler	N.M.
Crawford, Howard Irvin	Iowa
Crawford, James Garrison	Ind.
Crawford, Lorraine	Va.
Crawley, Robert Ambrose	D.C.
Crayton, Ruth Patrick	D.C.
Cree, Paul George, Jr.	D.C.
A.B. 1952, St. John's College	
Creech, Imogene Small	Md.
Creel, Jean Ann	Md
Creel, Luther Edward III	D.C.
Crenca, James John	Md.
B.E.E. 1955, The George Washington University	
Cress, Lillian Christine	Va.
Creswell, George Frederick	D.C.
Crestos, James Mims	D.C.
Crewey, Bertha Ovella	Va.
B.S. 1952, Madison College	
Cribb, Vance Newton	D.C.
Crider, Charles Eugene	Va.
B.S. 1954, Madison College	
Crider, James John	D.C.
Cridler, Catherine Marie	D.C.
Crigler, Constance Ann	Va.
A.B. 1956, Mary Washington College	
Crigler, John Frederick,	Ind.
LL.B. 1917, National University	
Crim, Howell Gardner, Jr.	Va.
Crimmins, Evelyn Ann	Kans.
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Diploma of Baccalaureate 1926, Liceum Moisa Nicoara of Arad	
Diploma of License at Law 1930, King Ferdinand I University of Cluj	
B.D. 1952, Colgate Rochester Divinity School	
Crissinger, Edwin Francis	Ind.
Crist, James Howard, Jr.	Va.
Crist, Joyce Lee	Va.
Cristea, Johnny Joseph	Va.
Criswell, Arthur Dan	Va.
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A.B. 1955, The George Washington University	
Crivella, Bartholomew Joseph	D.C.

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B.E.E. 1950, Catholic University of America
Crocetti, Norberto D.C.
Crock, Merle Edward Md.
Crockett, David John D.C.
Crockett, Mollie Ann Va.
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A.B. 1938, Washington Missionary College
A.M. 1952, Seventh-Day Adventists Theological Seminary
A.M. in Ed. 1954, The George Washington University
Croft, Rowland Carlos Utah
Croizat, Victor John Va.
B.S. 1940, Syracuse University
Cromartie, William Adrian Va.
B.S. in Comm. 1942, University of Georgia
LL.B. 1949, St. John's University
Cromer, Viris Wather, Jr. Md.
Cronin, George Harold Va.
Engineer of Mines 1926, Colorado School of Mines
A.M. 1955, University of the Philippines
Cronin, John Eugene D.C.
A.B. 1953, Catholic University of America
Cronin, Mary Patricia Md.
Crooks, James Reginald Va.
Cropley, Louise Woodbridge D.C.
Crosby, David S. Va.
Cross, Claud Oliver Md.
Cross, Ruby Virginia N.C.
A.B. 1938, King College
Cross, William Henry Va.
Crossette, Elizabeth Anne Md.
Croteau, Jeannette C. N.H.
A.B. 1957, Northwestern State College
Crouch, Kathleen Calhoun D.C.
Crouch, Kathleen Duncan D.C.
B.B.A. 1957, Georgia State College of Business Administration
Crouch, Marge Louise D.C.
B.S. 1947, Columbia University
Crouch, May Mo.
Crouse, Mary Edythe Va.
Crow, J. Frank Tenn.
B.B.A. 1952, University of Oklahoma
Crowe, George Frederick Va.
B.S. in C.E. 1933, University of Washington
Crowell, Gregory Lee Md.
A.B. 1957, American University
Crowell, Robert Norman N.Y.
Crowl, Clara Laitner Va.
Crowl, George Henry II Ohio
A.B. 1957, Oberlin College
Crowley, Leo Vincent Md.
B.S. 1937, University of Massachusetts
Crown, Mary Frances D.C.
Croyle, Carlton Rhule N.Y.
B.M.E. 1956, Clarkson College
Cruger, Flossie Genevieve D.C.
Cruise, Shirley Vivian Va.
Crumb, Richard Ellis N.Y.
Crumly, Howard William D.C.
Crumly, Vivien Muriel D.C.
Crump, Beverly Anderson Va.
B.S. 1948, Ed.M. 1950, University of Minnesota
Crump, Edmund Parke D.C.
A.B. 1957, The George Washington University

Crumpacker, William Perfater Va.
B.S. 1950, Virginia Polytechnic Institute
Crupi, Santa Palella D.C.
Cruse, Marshall Holman Texas
B.S. 1956, University of Maryland
Crutcher, Hope Hallbers Va.
A.B. 1949, Denison University
Crutcher, Thomas Dent Mo.
B.S. 1954, University of Missouri
Crutcher, William Chenault Va.
B.M.E. 1950, Georgia Institute of Technology
LL.B. 1957, University of Louisville
Crutchfield, Sam Shaw, Jr. D.C.
Cruz, Emilio Manahan Philippines
B.S. in B.A. 1938, University of the Philippines
LL.B. 1955, Manilla Law College
Cubbage, Phyllis Dygert Md.
B.S. in Ed. 1948, Northern Illinois State Teachers College
Cuddington, Max Earl N.C.
Cudmore, Patrick Hilbert D.C.
Culbreth, Joseph Worth D.C.
Cullen, Alice Kean Va.
B.S. 1942, Mary Washington College
A.M. 1956, American University
Cullen, David Paul Va.
B.S.E. 1956, M.S.E. 1957, University of Oklahoma
Cullen, Matthew Joseph, Jr. N.H.
A.B. 1946, Harvard University
Cullen, Michael Hawaii
A.B. 1955, The George Washington University
Cullen, Robert Scott Va.
A.B. 1954, Washington and Lee University
Culler, Annette Lorena D.C.
Cullinane, John Jeremiah, Jr. Va.
Cummings, Joseph Anthony Md.
Cummings, Lilla Burt D.C.
A.B. 1949, The George Washington University
Cummins, Owen Neal Va.
Cuneo, John Edward Va.
Cunningham, Brian Timothy Md.
Cunningham, Edward Earl Md.
A.B. 1952, Washington and Jefferson College
M.S. 1954, Duquesne University
Cunningham, Mary B. Md.
Cunningham, Richard Edwards Va.
Cunningham, William James Mass.
A.B. 1950, University of Massachusetts
Cunningham, William Poling Va.
A.B. 1948, Shepherd State College
Curatolo, Marshall Francis D.C.
Curbishley, Milton James Mass.
Curley, Barbara Ann Va.
Curran, Josephine Ann Md.
A.B. 1957, The George Washington University
Curran, Patricia Lee Va.
Curran, Richard Patrick Kans.
B.B.A. 1955, University of Oklahoma
Curry, Alma Martha D.C.
A.B. 1937, The George Washington University
Curry, Donald Charles N.Y.
A.B. 1952, Hamilton College
A.M. 1954, Johns Hopkins University

Curry, Mary Catherine B.S.C. 1942, New York State College for Teachers A.M. in Ed. 1950, The George Washington University	D.C.
Curry, Mary Sutherland	Va.
Curtin, John Tracy, Jr.	Va.
Curtis, Francis Thomas, Jr.	D.C.
Curtis, Jill M.	Ill.
Curtis, Kenneth Edward	Md.
Curtis, Paul Clay	Ohio
Curts, Daniel McClinton A.B. 1955, University of Michigan	Mich.
Cushard, William G., Sr.	Md.
Custard, Robert Franklin B.S.E. 1950, LL.B. 1951, LL.M. 1957, The George Washington University	Va.
Custer, Carolyn Lenore	Pa.
Custer, Kay	Va.
Custis, Robert Hunt B.S. 1952, Salem College	D.C.
Cuthbert, Patricia Alice	Fla.
Cuthbertson, Richard Donald B.S.E. 1957, University of Michigan	Va.
Cutler, Edwin Paul	Md.
Cutler, Mitchell Stein B.S. in B.A. 1955, Georgetown University	Md.
Cutting, Helen Frances A.B. 1921, Adelphi College A.M. 1930, Columbia University A.M. 1933, University of Chicago	N.C.
Cuttler, Donald Arthur B.S. in Ed. 1955, Indiana State Teachers College	Pa.
Cycyk, Maurice	Md.
Cykowski, Elizabeth Elder A.B. 1951, Rutgers University	Va.
Cykowski, Stanley A.B. 1946, University of Massachusetts	Va.
Czapiewski, Robert Crispin B.S. 1951, Pennsylvania State University	Va.
Czumak, George	D.C.

D

Daca, Rushdi	D.C.
Dach, Rachel MacIntyre A.B. 1955, A.M. 1956, The George Washington University	Md.
Dacus, Robert Warren B.E. 1954, Vanderbilt University	S.C.
Dacy, Edward Anthony	D.C.
Dade, Eleanor Marie A.B. 1953, Howard University	D.C.
Dagon, Ann Blaise	Md.
Dahl, Georgia Hermione A.B. 1956, Bryn Mawr College	Md.
Dahl, Norman Frederick, Jr. B.B.A. 1955, Hofstra College	D.C.
Dahlin, Jack Frederick	Md.
Dahlke, Francis Gene	Wis.
Dahlman, Eugene Kennard A.B. 1953, University of Minnesota	Minn.
Dahlstedt, Robert John	Md.
Dahlstrom, John Alexander B.S. 1956, University of Utah	Utah
Dailey, Henry Elwood A.B. 1951, Duke University	Va.
Dailey, John Gregory B.S. 1956, University of Maryland	Calif.
Daily, Charles Denis, Jr.	D.C.
Daines, Lowell Raymond B.S. 1955, Utah State Agricultural College	Utah
Daines, Paul Hatch B.S. 1954, Utah State Agricultural College	Utah
Dalaya, Chandra Kishen A.B. 1941, LL.B. 1943, A.M. 1947, University of Bombay	India
Dale, Louise Carolyn A.B. in Ed. 1936, Howard University A.M. 1948, New York University	D.C.
Dale, Robert Lee	Calif.
Dalseg, John William	Va.
Dalsheim, Henry Monroe A.B. 1948, The George Washington University	N.Y.
Dalton, Carol Frances A.B. 1957, The George Washington University	Fla.
Dalton, Mary Catherine	D.C.
Dalton, Olive	Miss.
Daly, Eleanor Jane	D.C.
Daly, Maureen Dolores	Mo.
Daly, Robert Paul B.S. 1956, University of Maryland	Va.
Daly, William Thomas	Ohio
D'Ambrosio, Gino	D.C.
Dameron, Roland Meade, Jr. B.S. in E.E. 1957, Virginia Polytechnic Institute	Va.
D'Amico, John Francis B.S. 1954, Massachusetts Institute of Technology	Md.
D'Amico, Louis Joseph A.B. 1956, The George Washington University	Ohio
D'Ammassa, Alfred Mario B.Ch.E. 1957, Cooper Union	N.Y.
Damon, George Huntington A.B. 1934, Harvard University A.M. 1938, Fletcher School of Law and Diplomacy	Md.
Damon, Harle Hoyt B.S. 1945, U. S. Military Academy M.S. 1950, University of Virginia	Md.
Dana, Irvin M. B.S. in B.A. 1953, Rider College	N.J.
Dancer, Jack T. B.S. 1957, University of Arizona	Ariz.
Dane, Barbara Penfield	D.C.
Dangel, Richard B.S. 1955, Massachusetts Institute of Technology	Md.
D'Angelo, Mary F.	N.Y.
Danick, Warren	D.C.
Daniel, Robert Herman A.B. 1950, The George Washington University	Va.
Daniels, Alan Murray A.B. in Govt. 1957, The George Washington University	Minn.
Daniels, Edward Kent, Jr. B.S. in M.E. 1955, West Virginia University	Va.
Daniels, George Foster A.B. 1954, Washington College	Md.
Daniels, Isabelle Cooke B.S. 1953, Washington College	Md.
Daniels, John Michael B.C.E. 1941, New York University	N.Y.
Daniels, Josephus A.B. 1954, University of Toledo	D.C.

Daniels, Lita Mae D.C.
Dano, John Nicholas Pa.
Danon, Victor D.C.
  A.B. 1951, Syracuse University
  A.M. 1953, Johns Hopkins University
Dansker, Martin Samuel Mass.
  A.B. 1957, University of Massachusetts
D'Antimo, Daniel N.Y.
  B.S. 1948, University of Buffalo
Darby, Joan Elizabeth D.C.
Dargue, Marjorie Frances Va.
  A.B. 1941, Upsala College
Darland, Lloyd Eugene Kans.
  B.S. 1950, U. S. Military Academy
Darmody, Philip Anthony Md.
  B.S. in E.E. 1933, University of Notre Dame
Daron, Walter Steril Va.
  B.S. 1954, Pennsylvania State University
DaRosa, Monica D.C.
Darrigo, Letterio Leo Va.
Darrow, Dan Kellogg Md.
Datto, Antonia Rose Pa.
  A.B. 1957, Marywood College
Daugherty, James Carroll Md.
  A.B. 1954, Amherst College
Daughtridge, Betty Jean Brown D.C.
  B.S. 1949, Western Carolina College
  Ed.M. 1952, B.S. in B.A. 1953, University of North Carolina
Davajon, Val Calif.
  A.B. 1956, Stanford University
Davenport, Edward C. Md.
  A.B. 1951, Marietta College
Davenport, M. Marguerite D.C.
  B.S. 1934, Tennessee State University
  M.S. 1943, University of Pennsylvania
Davenport, Vera Tymous D.C.
  B.S. 1936, D. C. Teachers College
Davenport, Walter William N.Y.
  B.Ch.E. 1951, Rensselaer Polytechnic Institute
Davey, Harry Ellsworth Va.
  B.S. 1939, U. S. Naval Academy
David, Robert Spencer D.C.
  B.S. 1938, University of California
  A.M. 1949, The George Washington University
David, Stuart Carlton D.C.
Davidson, Doris Ann D.C.
Davidson, Harold F. Va.
  B.S. 1940, College of the City of New York
Davies, Delores Ellen D.C.
Davies, George Alfred Pa.
  A.B. 1956, University of Philippines
Davies, Isabel Merrick D.C.
Davies, John Merrick D.C.
Davies, Peter Merrick D.C.
Davis, Adalyn Md.
Davis, Akin Thornwall D.C.
  B.Ch.E. 1953, University of Delaware
Davis, Ann Norman Md.
Davis, Arthur M. D.C.
  Mus.B. 1950, Mus.M. 1956, Catholic University of America
  Mus.D. 1955, University of London
Davis, Chester Leslie, Jr. Mo.
  B.S. in E.E. 1957, University of Missouri
Davis, Curtis Lynn D.C.
Davis, David Murray D.C.
  B.S. 1956, University of Maryland
Davis, Donald Earl N.C.
  B.S. in E.E. 1954, North Carolina State College
Davis, Donald McKenzie D.C.
  A.B. 1950, University of Maryland
Davis, Doris Mary N.Y.
Davis, Elizabeth Creese N.J.
  A.B. 1954, Oberlin College
Davis, Ella Marian Va.
Davis, Elton Daniel Va.
Davis, Frederic Whitlock Conn.
  B.S. in E.E. 1947, University of Connecticut
Davis, George Milton S.C.
  A.B. 1951, Berea College
  A.M. 1956, Duke University
Davis, Guy Jake Texas
  B.S. 1952, University of Houston
Davis, Helen C. La.
Davis, Jeanne Marie Md.
  A.B. 1951, The George Washington University
Davis, Joel Samuel D.C.
Davis, John Tait Canada
  A.B. 1955, University of Toronto
Davis, Karl Ernst Md.
  A.B. 1955, Hampden-Sydney College
Davis, Kenneth Lee D.C.
  A.B. in Govt. 1950, The George Washington University
Davis, Margaret Smith Md.
  A.B. in Ed. 1952, The George Washington University
Davis, Mary D.C.
  A.B. 1950, The George Washington University
Davis, Milton Bernard Md.
  A.B. 1935, University of Pennsylvania
Davis, Nancy Ann Va.
Davis, Raymond Gilbert Ga.
  B.S. 1938, Georgia Institute of Technology
Davis, Rosamond Martindale D.C.
Davis, Stephanie Jo D.C.
Davis, Sylvia May Va.
  A.B. 1954, Middlebury College
Davis, Ulysses D.C.
  A.B. 1953, University of Iowa
Davis, Warner Philip D.C.
  A.B. 1949, Millikin University
  A.M. 1957, American University
Davis, Wayne Alton Canada
Davis, Wayne Beverly Md.
Davis, Wilbur Chamberlain Md.
  A.B. 1950, University of Maryland
  LL.B. 1953, The George Washington University
Davis, William Roy Md.
  B.S. 1957, Maryland State Teachers College, Frostburg
Davis, William Spalding Md.
Davison, Gordon Earle Md.
Davitt, Alan Park D.C.
Dawes, Calvin Eugene D.C.
Dawn, Robert Jean Va.
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  A.B. 1948, A.M. 1957, Howard University
Dawson, Elizabeth Ann Md.
Dawson, James Henry Iowa
Dawson, Olivia Idella D.C.
Dawson, Robert Lee Ohio
Day, Charles Herbert Md.
  B.S. 1953, University of Maryland

Day, James Kenneth D.C.
A.B. 1952, University of Illinois
Day, John Ronald, Jr. Md.
B.S. 1956, University of Maryland
Day, Philip Ernest Va.
Deal, Frankie Joan D.C.
Dealy, Glen David Wash.
A.B. 1957, University of Washington
Dean, Agnes Mary Va.
A.B. in Ed. 1955, The George Washington University
Dean, Allen Ray D.C.
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B.S. in Eng. 1935, University of Michigan
Dean, Marguerite Va.
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A.B. in Govt., A.M. in Govt. 1951, The George Washington University
De Angelis, Julia Marie Conn.
De Angelis, Quinty Carl Va.
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B.S. in I.E. 1957, University of Pittsburgh
Deary, William Paul N.Y.
B.S. 1953, Manhattan College
Deason, Myrna Reeves Md.
A.B. 1938, University of Alabama
Deaton, Charles Milton Miss.
A.B. 1956, Millsaps College
Deavers, Mildred Dodson Va.
B.S. in Ed. 1954, Madison College
Debnam, Randolph Warren D.C.
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B.S. 1953, Syracuse University
M.S. 1955, The George Washington University
De Bor, Eugene D.C.
A.B. 1951, M.Litt 1955, University of Pittsburgh
deBordenave, Penelope Armistead Va.
DeBusk, Clinton Eustace Va.
A.B. 1950, Bridgewater College
A.M. 1953, University of Virginia
deButts, Dulany Forrest Md.
DeCamp, Roger Allan Va.
Deckelman, Francis Clark Md.
Decker, Beatrice Jo-Ann Pa.
Decker, James Ayres W.Va.
B.S. 1956, West Virginia University
Decker, James John Pa.
DeCosta, Robert Francis Va.
Deem, Shirley Calif.
Dees, Lola Tidwell D.C.
A.B. 1950, The George Washington University
Dees, Louis Linwood R.I.
A.B. 1943, Pomona College
LL.B. 1950, Harvard University
Dees, Sarah Edna D.C.
Deeters, Mary Matthews Va.
B.S. 1938, Alabama State Teachers College, Florence
DeFreytas, S. Thomas Md.
A.B. 1928, Catholic University of America
De Gast, Robert D.C.
Degen, Bernard John N.J.
Degner, Donald Duane D.C.
DeGolier, Richard Elmer Va.
A.B. 1954, Montana State University

De Groot, Jerry Wash.
A.B. 1951, University of Washington
DeGiorgi, Salvatore Paul Va.
B.S. 1952, Seton Hall University
Deierhoi, Frank Leslie Va.
A.B. 1949, College of William and Mary
Deitch, Ronald Stuart D.C.
A.B. 1954, Washington and Lee University
Deitrick, Thomas Carter Va.
De Jong, Frederik Ferdinand D.C.
De Kay, Marjorie Ann Va.
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A.B. 1937, A.M. 1942, New Jersey State Teachers College, Montclair
De Konschin, Anna Nicholas D.C.
De Lalla, Ralph Louis D.C.
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A.B. 1954, University of New Mexico
de Laski, Donald Va.
A.B. 1954, Duke University
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De La Vergne, William Harold, Jr. D.C.
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De Legarreta, Francisco D.C.
B.S. 1951, Georgetown University
De Leonardis, Anthony V. D.C.
B.S. 1952, University of Illinois
Delevett, James Oliver Md.
A.B. 1953, University of Maryland
Delgado, Concepcion Montenegro Philippines
Del Genio, Martha F. D.C.
B.S. 1943, University of Tennessee
Del Grande, Michael Robert D.C.
Del Grande, William Lee D.C.
Dell, Albert Hampson Md.
Dellitt, John Philip Va.
B.S. 1950, Iowa State College
de Lorenzi, Robert Martin N.J.
Delp, Robert Worley Md.
B.S. 1947, Davidson College
Delsart, Maria Pyskack Pa.
A.B. 1951, University of Pittsburgh
De Luca, Vincent James N.Y.
B.S. 1957, Brooklyn College
De Lucas, John Carmon Md.
De Luz, Lozelle Jenkins D.C.
B.S. 1952, Winston-Salem Teachers College
Del Valle, Katherine Ellen D.C.
De Martino, Elaine Ellen D.C.
B.S. 1954, Ladycliffe College
De Martino, Maurizio Furio D.C.
Demas, Louis Va.
Demas, Louisa Peter D.C.
Demas, Nicholas George Md.
B.S. 1957, West Liberty State College
De Melfi, Ronald Michael Pa.
Dement, Richard Anthony Md.
Demetroulis, Nicholas Menelaos Va.
B.S. 1948, South Dakota State College
De Mordaunt, Paul Roger Idaho
Demos, Laura S. Va.
Dempsey, John Joseph D.C.
A.B. 1957, Catholic University of America
Denby, Elisabeth Lyster D.C.
Denegar, Gracemary Elizabeth N.J.
A.B. 1955, Bryn Mawr College
Dennis, James Edward D.C.
Dennis, Perry LeRoy D.C.

Dennison, Donald Lee Va.
  B.S. in M.E. 1955, Carnegie Institute
    of Technology
Dennison, Roy James D.C.
  B.S. 1950, University of Bridgeport
Densford, Robert Warner D.C.
  A.B. 1957, Haverford College
Dent, James Armistead, Jr. D.C.
Denty, William Marsden Va.
Denver, Kathleen Mary N.Y.
DePalma, Irene Palmer D.C.
  B.S. 1956, Bob Jones University
De Paul, Albert Lucius Md.
  A.B. 1956, The George Washington
    University
De Quattro, Vincent Louis Calif.
  B.S. 1955, University of California
Deraney, Edward Anthony N.J.
  B.S. 1956, Columbia University
Derell, Dorothy Lee Va.
  A.B. 1956, Friends University
Derell, Gene Remy Va.
De Reuil, Louis Joseph Va.
  B.B.A., LL.B. 1954, Tulane University
Derickson, Catherine Anna Md.
de Rizzo, Jacintho Brazil
Der Martirosian, Edward Iran
Derrick, Robert Oliver Va.
Derro, Robert Arthur Mass.
  A.B. 1957, Harvard University
Derry, Mary Anne Va.
  A.B. in Govt. 1947, The George
    Washington University
Dertien, Donald Alfred Mich.
De St. Aubin, Frances Lillian D.C.
De Sarno, Michael John D.C.
Deschler, Lewis II Md.
  B.S. 1953, LL.B. 1955, Washington
    and Lee University
de Seife, Gloria Vasta D.C.
de Silva, Sara Thompson D.C.
  A.B. 1924, Wellesley College
  A.M. 1927, Radcliffe College
de Silva, Susan Carmita Md.
De Simone, James William Va.
  B.S. in E.E. 1957, University of Illinois
De Souza, Daniel Arthur Va.
De Stephano, Russell Joseph Pa.
Detwiler, Charles Robert Va.
Detwiler, Harry Grubb Pa.
  B.S. 1936, Pennsylvania State Teachers
    College, West Chester
  A.M. 1952, The George Washington
    University
Deuber, Frederick Joe Ohio
  B.S. 1953, Ohio State University
Deubler, Rosanne Helen D.C.
Deutschman, Barry Howard D.C.
Devan, Thomas Arthur D.C.
  A.B. 1949, The George Washington
    University
Dever, Marion Lee Va.
Deverall, Catherine Noble Va.
Devereaux, William Joseph Va.
  B.M.E. 1950, Johns Hopkins University
Devin, Charles, Jr. Md.
  B.S. 1953, The George Washington
    University
Devine, William, Jr. Md.
  B.S. 1942, M.S. 1947, Massachusetts
    Institute of Technology
De Vita, Vincent Theodore Va.
  B.S. 1957, College of William and Mary

Devlin, Harold Bernard D.C.
Devlin, Leighton Hugh Md.
  B.E. 1954, Johns Hopkins University
Devlin, Mary Elizabeth Md.
De Vore, Phillip Wayne Md.
  A.B. 1957, Lafayette College
De Vries, Charles H. D.C.
  B.S. 1954, Iowa State College
De Vries, Egbert Ohio
  B.S. 1954, University of Maryland
De Vries, Mary Ann Iowa
Dew, Edward MacMillan Calif.
  A.B. 1957, Pomona College
Dewar, Lucille Minerva D.C.
  A.B. 1932, Oberlin College
  Ed.M. 1944, Wayne State University
Dewberry, Jimmie Wade Va.
Dewitt, Kurt Germany
  A.B. 1941, Reed College
De Witt, Miriam Hapgood D.C.
Dews, Edwin Terry D.C.
De Zell, John Louis Calif.
  B.S. 1956, Oregon State College
Dhawan, Madan Gopal D.C.
Diamond, Jack Md.
  A.B. 1951, The George Washington
    University
Diamond, Joyce D.C.
  B.S. 1951, D. C. Teachers College
Diamond, Melvin Harry Md.
Diaz, John Andrew Pa.
  B.S. 1952, Lehigh University
Diaz, Yvonne Maria N.J.
Dible, Duane William Md.
Dibbs, Frederick Newton D.C.
Di Cesare, Catherine Francis Md.
  A.B. 1944, Notre Dame College
    of Maryland
Di Chiacchio, Louis Carmelo D.C.
di Ciero, Carol Jean Conn.
  B.S. 1953, Simmons College
Dick, Lohr Mitchell Va.
  A.B. 1947, Princeton University
Dick, Mary Ann Pa.
Dickason, Hanna Ohio
Dickemann, Charles Edward Mo.
Dickens, Beatrice Sprague Va.
  A.B. 1922, Hiram College
Dickens, David Bruce Md.
  A.B. 1955, University of Buffalo
Dickens, William Paul Md.
  B.S. 1956, University of North
    Carolina
Dickerson, Charles Courtney Calif.
Dickerson, Paul Boyce Md.
Dickerson, Ruth D.C.
  A.B. 1956, The George Washington
    University
Dickey, Foster Richard Texas
  B.S. 1928, U. S. Military Academy
Dickey, William Lee S.D.
  A.B. 1957, Augustana College
Dickinson, Dean Charles Va.
Dickinson, Helen Douglas Va.
Dickson, Wallace Gordon Va.
Diddle, Gerald Frederick Md.
  B.S. in E.E. 1949, University of
    Pittsburgh
Dieckman, Leslie Bernard New
  A.B. 1947, Western Michigan
    College of Education
Diedrichs, Susan Lillian D.C.

Diegelmann, Marion Faith Md.
A.B. 1955, The George Washington University
Diehl, Jack Lee Va.
B.S. in Ed. 1953, New York State Teachers College, Potsdam
Diehl, James Edward Pa.
Diemer, Fred Joseph Md.
Dietrich, Earl Donald Md.
A.B. in Govt. 1957, The George Washington University
Dietrich, Lloyd Eckert Va.
A.B. 1952, Pennsylvania State University
Dietz, Stephen Karl D.C.
Diffee, James Marsh III D.C.
Di Franco, Antonio D.C.
Diggins, John M. Pa.
A.B. 1955, Cornell University
Diggs, John Oliver Md.
B.S. 1952, Maryland State Teachers College, Frostburg
A.M. in Ed. 1957, The George Washington University
Diggs, Walter Preston D.C.
B.S.C. 1951, North Carolina College at Durham
Diliberto, Josephine Md.
A.B. 1937, New Jersey State Teachers College, Montclair
Dill, Glenn Dee Md.
Dillard, Edward Kennedy Ala.
B.S. in E.E. 1956, U. S. Naval Academy
Dillard, Robert Halsey, Jr. Mich.
Dille, Lloyd Richard D.C.
Dillenbeck, Nancy Helen N.Y.
B.S. 1953, Cornell University
Dillinger, James Jackson D.C.
Dillon, Rachael Louise Va.
Dillon, Retta Walsmith D.C.
A.B. in Ed. 1929, A.M. 1935, The George Washington University
Dilweg, Robert Anthony D.C.
Dilworth, Donald Charles Md.
Di Marco, Anthony Joseph Md.
B.S. 1950, University of Maine
Dimick, Dorothy Ill.
Dimon, Thomas Ford D.C.
Dimond, Robert Edward Md.
Dimond, Thomas Francis Md.
Dinan, Francis William Va.
A.B. 1935, A.M. 1938, Boston College
Ed.M. 1951, Harvard University
Dines, Ellen Theresa D.C.
A.B. 1956, Manhattanville College of the Sacred Heart
Dines, Nancy A. D.C.
Dingler, Richard William D.C.
B.C.E. 1951, The George Washington University
Dingman, Richard Briggs Md.
Dinkel, John Fred, Jr. Va.
Dinkin, Barbara Ruth D.C.
Dinneen, Edith Elaine Va.
Dinneen, Sylvia Ann Va.
Dinnsen, H. Frederic Ill.
A.B. 1955, A.M. 1957, University of Illinois
Dinsmore, Paul Rich Maine
A.B. 1954, University of Maine
Dinsmore, William Stewart Va.
A.B. 1950, Drew University

Di Palma, Salvatore Va.
B.S. 1953, Fairfield University
M.B.A. 1954, Syracuse University
Di Paul, Frank Martin Va.
A.B. 1952, A.M. 1953, University of Alabama
Di Pierre, Nina Isabelle N.Y.
Dishart, Martin D.C.
B.S. 1950, College of the City of New York
Disler, Oscar Charles Pa.
A.B. in Govt. 1945, The George Washington University
Ditano, Leonard Anthony, Jr. Md.
Ditoro, Richard Dean N.Y.
Dittenhafer, Elizabeth Jane D.C.
Dittmar, Richard Edward D.C.
B.S. in Agric. 1948, Ohio State University
Diuguid, John Powell Md.
A.B. 1954, Virginia Military Institute
Dively, Robert Roy Pa.
A.B. 1957, Pennsylvania State University
Diven, Corella Marian Va.
Dix, Michael William Mass.
Dix, Robert E. N.J.
Dixon, Fred E. D.C.
Dixon, Harold Anthony N.Y.
B.E.E. 1954, New York University
Dixon, Patricia Joanne Va.
B.S. 1954, Indiana University
Dixon, Robert McChesney Va.
Dixon, Ronald Olson Va.
Dixson, Blanche Ely Md.
Dixson, Jimmy Durward D.C.
Doane, Linda Lou D.C.
Dobbins, William Edward Va.
Dobbs, Katherine Josephine Texas
Dobie, Carolyn Ann Mich.
A.B. 1955, Albion College
Dobozy, Rodney W. D.C.
Dock, Arthur John, Jr. Md.
B.S. 1954, Maryland State Teachers College, Bowie
Dockterman, Dorothy Lillian D.C.
Dodds, Chauncey Yandell, Jr. Md.
A.B. 1951, The George Washington University
Dodds, Susan Frances Va.
Dodek, Samuel Mayer D.C.
A.B. 1923, The George Washington University
M.D. 1927, Jefferson Medical College
A.M. (in Obstet.) 1931, Western Reserve University
Dodge, Barbara Ann Mass.
Dodge, Byron Wash.
B.S. 1954, University of Washington
Dodge, Drexel Melvin Pa.
Dodge, Helen O. Va.
B.S. 1938, Northern State Teachers College
Dodge, John Edmondson Va.
B.E.E. 1954, The George Washington University
Dodge, Peter Jerome D.C.
Dodrill, Earl Junior Md.
A.B. in Ed., B.S. in Retailing 1950, Fairmont State College
Dodson, George Henry, Jr. Va.
Dodson, Herbert Brown S.C.
Dodson, James Montgomery N.J.

Dodson, Sondra Patricia D.C.
Dodson, Thelma Stafford D.C.
B.S. 1938, D.C. Teachers College
A.M. 1954, New York University
Doerfer, John Page Md.
Doering, Charles Edward D.C.
Doescher, Howard Donald Okla.
B.S. in Ch. E. 1948, University of Denver
Doggett, Judith Elizabeth D.C.
Doherty, John T. N.Y.
B.S. 1955, New York State Teachers College
Doherty, Joseph Charles D.C.
A.B. 1948, Duquesne University
Doherty, Robert James, Jr. Mass.
B.S. in Ch.E. 1957, Northeastern University
Doherty, William Eugene N.Y.
Dohne, Brian Charles D.C.
Dohner, John Ellis Va.
B.S. 1953, University of Virginia
Doiron, Claude Joseph, Jr. La.
B.S. 1941, Louisiana State University
Doiron, Frank Xavier, Jr. Md.
Dolan, John Albert Md.
B.S. 1957, Georgetown University
Dold, Anthony Va.
Dolde, Mary M. Va.
Dolfis, Katherine Genevieve D.C.
Doll, Mary Gardielde Md.
Dollison, Robert Benson Va.
B.S. in I.E. 1951, Columbia University
Dolson, Robert Edward D.C.
Dombek, Edward Charles Conn.
Dombrausky, Robert L. D.C.
Domingus, Howard L. Md.
Domzalski, Joseph Donald Pa.
Donahoe, Constance Regina Va.
Donahue, Mary D.C.
Donald, Dorothy Gordon D.C.
Donaldson, Jerold Wayne Kans.
Donaldson, Walter Alexander II Va.
A.B. 1957, Allegheny College
Donaldson, William Kenneth Va.
B.S. 1956, Yale University
Donato, Dan, Jr. Va.
B.S. 1950, College of Charleston
Donato, Mary M. Va.
Donegan, Robert James Va.
Donley, John Pierce Ill.
Donnelly, James David N.Y.
B.S. 1943, Georgetown University
Donnelly, Kenneth Lanier D.C.
Donnelly, Victor Francis Va.
B.S. 1949, Seton Hall University
Donoghue, Kevin Joseph Md.
Donohoe, John James N.Y.
Donohue, Joseph Walter Md.
B.S. 1957, Columbia University
Donovan, Daniel Gerald Va.
A.B. 1951, Brown University
Donovan, Gerard Matthew Mass.
Dooley, Eugene William Va.
B.S. in B.A. 1956, Seton Hall University
Dooley, Linda-Anne Va.
Dooley, Wilbur Jay Md.
Dopp, Earl William Va.
B.S. 1957, Tulane University
Doran, Gerald John Mass.
B.S. 1949, Boston University

Dorasavage, John James
A.B. 1950, Villanova University
Dorfman, Stanley
Doringer, Elisabeth Susanne
Dorland, Edward Metcalf
Dorman, Charles Gilpin
B.S. 1947, University of Delaware
Dornin, Margot
Dorsey, William Walter
Dortch, Zura Maryland
B.S. in Ed. 1948, St. Paul's Polytechnic Institute
Dotson, William Morgan
Dottor, Lawrence Joseph
A.B. 1954, Muhlenberg College
Dougan, Barbara May
Dougherty, Louis Leighton
B.E.E. 1956, The George Washington University
Douglas, Elinor V.
A.B. 1930, A.M. 1934, State University of Iowa
Douglas, Ferman Edward
Douglas, John Oliver Allen
A.B. 1950, Whitman College
Douglas, Paul Grosvenor
Douglas, Wallace Lyman
B.S. 1949, Massachusetts Institute of Technology
Douglas, Walter Edmond
B.S. 1954, M.S. 1955, North Carolina College at Durham
Douglass, Matthew McCartney
B.E. 1952, McGill University
Douma, Allene Vartia
B.S. 1950, University of Minnesota
Dounis, Nicholas George
A.B. 1953, The George Washington University
Douty, Christopher Morris
Dove, Donald Albert
Dowdy, Sam Gene
A.B. 1946, A.M. in Govt. 1948, The George Washington University
Dowell, Susan Jane
Dower, Vernon Cecil
A.B. 1937, Wesleyan University
Dowgiallo, Edward James
Dowling, Ellen Condon
Dowling, Mary Louise
B.S. 1937, University of Pittsburgh
M.S. 1941, University of Wisconsin
Downes, Elizabeth Anne
A.B. 1949, Boston University
Downey, Fred McEwen
A.B. 1956, Duke University
Downs, Charles Lowell
Downs, Charles Winfield
Downs, Michael Emery
Dowrey, Carl Gordon
B.S. 1958, Montana State College
Dowrey, Carol Price
Doyle, Eston Shipman
Doyle, Eugene Lawrence, Jr.
Doyle, Grace Louise
Doyle, Herbert Aloysius, Jr.
A.B. 1954, The George Washington University
Doyle, Joseph Thomas
Doyle, Mahlon Eugene
A.B. 1949, B.E.E. 1957, The George Washington University

Doyle, Thomas Francis Va.
A.B. 1949, Harvard University
Drabek, Jaroslav A. D.C.
A.B. 1953, Washington and Lee University
Draffen, Mary Theresa D.C.
A.B. 1950, Seton Hill College
A.M. 1952, Catholic University of America
Drain, Thomas Thorpe Va.
Draina, Rita M. Pa.
Drake, Daniel Q. Calif.
B.S. 1915, University of California
M.P.L. and S.J.D. 1940, National University
Drake, Dorothy Georgette Md.
A.B. in Govt. 1955, The George Washington University
Drake, Jeanne D.C.
Draper, Elizabeth Kohl D.C.
A.B. in Ed. 1924, A.M. in Ed. 1933, The George Washington University
Draper, Harold Wesley N.Y.
A.B. 1954, Taylor University
Draucker, James Franklin Va.
Drayson, John Arthur D.C.
Graduate 1953, Brighton Technical College, England
Dredge, Grace Agatha Va.
Dreier, Karen Louise Mo.
Dresser, Philip Launston Va.
B.E.E. 1950, University of North Carolina
Dressin, Sam Aaron N.Y.
B.S. 1943, U.S. Naval Academy
Dressler, Harry Richard Mass.
Drew, Edward John, Jr. Md.
Drexler, Stanley N.Y.
Driggers, Raymond Lavern S.C.
Drinis, Harry D.C.
A.B. 1955, Texas Western College
Driscoll, Michael Joseph D.C.
Driscoll, Thelma Elaine Va.
Ph.B. 1945, University of Chicago
Drociak, Joseph Lucas N.H.
A.B. 1956, St. Anselm's College
Droescher, John Joseph, Jr. Md.
A.B. 1951, Colgate University
Dromedick, Alexander Walter Md.
B.M.E. 1954, Brooklyn Polytechnic Institute
Drucker, Teviah E. S.C.
B.S. 1956, University of South Carolina
Drullard, Daniel Clinton D.C.
Drummond, Barbara Jean D.C.
A.B. 1954, Mount Holyoke College
Drummond, Douglas Jay Md.
B.S. 1950, University of Maryland
Druse, Katherine Ohio
A.B. 1917, Iowa Wesleyan College
A.M. 1928, Columbia University
Dryden, Muriel Ann D.C.
Duangden, Montri Thailand
Law Degree 1945, University of Thammasat, Thailand
Dubeau, Edward Joseph Va.
Dubendorf, Jeanne Md.
Dubiel, Stanley Victor, Jr. Va.
B.S. 1951, Bradford Durfee Technical Institute
M.S. 1951, Northeastern University

Dubinsky, Arnold J. Pa.
Dubreuil, Nora Mae Okla.
Du Brow, Le Roy Norman N.J.
Duckett, Martha Arnelle Md.
A.B. 1952, Morgan State College
Duckworth, Robert Wells Fla.
B.I.E. 1957, University of Florida
Ducoli, John Anthony Calif.
A.B. 1954, A.M. 1956, University of California at Los Angeles
Ducote, Richard Joseph N.J.
Dudley, William B. Fla.
B.S. 1943, U.S. Military Academy
Dudzik, Sylvester Peter Md.
Duensing, Hollis Ill.
Duesterdick, Roy Herman Va.
B.S. 1951, Rutgers University
Duff, William Grierson Va.
Duffey, Maurice Jefferson Va.
B.S. in Com. 1948, University of Virginia
Duffie, Claire Alfred Pelton Pa.
B.S. 1942, U.S. Military Academy
Duffield, Lucille C. Va.
Duffy, Christopher Ogden D.C.
B.C.E. 1952, Georgia Institute of Technology
Dufresne, Joseph Paul D.C.
B.S. 1943, LL.B. 1948, Georgetown University
Dugan, Joseph Richard Pa.
B.S. 1956, King's College
Duggar, John Sampey Va.
Duke, Florence L. Md.
A.B. 1950, University of Maryland
Duke, Jesse C., Jr. Va.
Duke, Thomas Edward Md.
Dukes, Charles Aubrey, Jr. Va.
A.B. 1955, LL.B. 1957, Duke University
Duke-Wooley, Christine Diana Va.
Dulaney, Donald Allan Md.
Dumont, Harry Robert Va.
LL.B. 1951, University of Michigan
Dumper, Nancy Knowles N.Y.
A.B. 1956, Mount Holyoke College
Dunaway, George Baxter D.C.
B.S. 1950, Alabama Polytechnic Institute
Dunbar, John Gregory Va.
Duncan, Clara Louise D.C.
Duncan, Ida Carleen D.C.
B.S. 1944, Concord College
Duncan, Mary Frances D.C.
Duncan, Mary Louise D.C.
Duncan, Richard Joseph N.Y.
B.S. in C.E. 1952, Union College
Duncan, Vannce D.C.
B.C.E. 1926, Ohio State University
Duncan, Wallace La Mar Utah
Duncan, William McKinley Texas
A.B. 1956, University of Texas
Dunford, Leah Idaho
B.S. 1955, Utah State Agriculture College
Dungan, William Ashton Md.
Dunham, Barbara Joan Va.
Dunham, Franklin George Va.
Dunivin, Alvin John Va.
Dunkelman, Lawrence Md.
B.E.E. 1938, E.E. 1949, Cooper Union
Dunlap, James Jennings Va.

Dunlap, John Fretwell Ga.
B.S. 1937, Clemson Agricultural College
Dunlap, Richard Denys Va.
Dunlap, Richard Joseph Wash.
A.B. 1957, University of Washington
Dunlap, Sandra Kay Va.
Dunman, Jo Edith Va.
Dunn, Florence Wright D.C.
A.B. 1956, The George Washington University
Dunn, John Glenville D.C.
Dunn, Robert McDaniel D.C.
Dunn, Robert Stanley D.C.
Dunn, Ronald Edward Idaho
B.S. 1957, University of Idaho
Dunn, Walter Frank Tenn.
B.S. 1952, East Tennessee State College
Dunne, Gerald John Va.
Dupree, Lartius Trescott D.C.
B.S. 1955, Morgan State College
Dupree, Thomas Byrd La.
A.B. 1921, B.S. 1922, LL.B. 1927, Louisiana State University
Dupuis, Mary Miles Va.
Durant, Quincie Griggs D.C.
Durell, Viviane Conn.
B.S. in F.S. 1953, Georgetown University
Duren, Elton Woodrow Va.
Durfee, Richard Allen D.C.
Durgin, Calvin Thornton, Jr. Va.
Durgin, Harry Everett D.C.
B.S. in E.E. 1951, Washington State College
Durham, Annette D.C.
Durham, Henry Coleman Ky.
B.S. 1953, University of Kentucky
Durham, Jean Elizabeth Va.
B.S. 1934, Georgia State College for Women
Durham, Vera Crenshaw Mo.
Durley, Raymond Eugene Va.
Durnan, Denis Donald Va.
B.S. in Ch.E. 1957, University of Washington
Durrum, Mary Denman D.C.
A.B. 1938, University of Missouri
A.M. in Govt. 1957, The George Washington University
Durst, Maureen Yvonne D.C.
Duvall, Gordon Lester Va.
A.B. 1952, Michigan State University
Duvall, John Hart Va.
A.B. 1955, Principia College
Duwel, Robert Henry Ohio
Duxbury, William John Va.
B.S. in Phar. 1952, University of Wisconsin
Dvorak, Thomas Leu D.C.
Dwgoli, John Anthony Pa.
A.B. 1954, A.M. 1955, University of California at Los Angeles
Dwinell, Davis Blair Pa.
B.S. 1957, Pennsylvania State University
Dwornik, Stephen E. Va.
A.B. 1950, A.M. 1951, University of Buffalo
Dwyer, Edward Hill Md.
Dybeck, Alfred Charles Va.
A.B. 1955, The George Washington University

Dybrig, Roger Sundal
B.S. 1955, University of Florida
Dye, Emmett Charles, Jr.
Dyer, Eleanor Folsom
A.B. 1930, American University
Dyer, Peter Sinclair
Dyess, Benjamin Baltley
Dyson, Edward Ernest
Dyson, Joseph Sheldon
B.S. in E.E. 1950, U.S. Air Force Institute of Technology
Dzenitis, Ausma

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Eagan, Charles Gary
Eagle, Helyn Doris
A.B. in Govt. 1957, The George Washington University
Eagleston, Bernard Edwin, Jr.
Eagon, Meredith Abigail
Earl, Lawrence Eugene
Earle, Julius Richard, Jr.
Earley, Freeman Edward
Early, Douglas McCord
Earnshaw, Robert Crump
B.S. 1957, American University
Easley, Rex Carlos
Easley, Wilma Jane
Easly, Bond Collier
East, William James
Easter, George Cordell
A.B. 1956, Princeton University
Easter, Lyle Hayden
Easterling, Phillip Schaffer
Eastham, Lucy Beale
A.B. in Ed. 1937, The George Washington University
A.M. 1943, University of Wisconsin
Easton, Carl Wilbur
Eastwood, Charles Robert
B.S.E. 1946, B.S. in C.E. 1947, University of Virginia
M.B.A. 1950, Harvard University
Ebenfield, Helene
Eberhart, Francis Claude
A.B. 1940, University of Dubuque
LL.B. 1948, University of Florida
Eberly, Douglas Peck
Ebert, Paul Burns
Eberts, Joseph Warren
B.S. in Ed. 1950, Pennsylvania State Teachers College, Kutztown
A.M. in Ed. 1955, The George Washington University
Eby, William Henry
Echols, Marion Patton, Jr.
B.S. in C.E. 1945, Virginia Military Institute
Echols, Mary Tuck
Eckelmeyer, Edward Herman, Jr.
B.S. 1927, U.S. Naval Academy
Eckert, Charles M., Jr.
Eckhouse, Sherrill Joan
B.S. 1957, University of New Mexico
Eckhout, Wilmont Sylvester
B.S. 1950, Ed.M. 1958, Oregon State College
Eckstein, Madeline Winn
A.B. 1934, Greensboro College
Economides, Alexandra Mattheos
Eddings, Marilyn Rae
Edel, Albert Frederick, Jr.
A.B. 1955, University of Pennsylvania

Edelin, Marilyn Patricia D.C.
Edelson, Ann Gail D.C.
Edelson, Charles Bernard Md.
B.B.A. 1949, University of New Mexico
M.B.A. 1950, Indiana University
Edelstein, Richard N.Y.
A.B. 1952, Cornell University
Eden, Alan Whitney D.C.
A.B. 1954, Ohio Wesleyan University
Eden, James Irven D.C.
A.B. 1949, College of Wooster
Ederma, Vello Md.
Edgar, Robert James Va.
B.B.A. 1953, St. Bonaventure University
Edgerton, Catherine Griffith Md.
Edington, Betty Gayle D.C.
Edlavitch, Irwin Paul D.C.
A.B. in Govt. 1956, The George Washington University
Edler, Elizabeth Savilla Va.
Edlund, Paul Erik Md.
A.B. 1948, Yale University
A.M. 1954, University of Virginia
A.M. 1955, University of Michigan
Edmiston, Lester Starr Md.
Edmondson, John Francis Va.
Edner, Lewis Vernon Ohio
B.B.A. 1950, University of Toledo
Edsel, Billy Ray D.C.
Edson, Andrew Warden D.C.
A.B. 1925, Dartmouth College
A.M. 1927, Harvard University
Edson, Jean Slater D.C.
A.B. 1928, Vassar College
A.M. 1930, Columbia University
Edson, Margery Huff Va.
B.S. in Ed. 1936, University of Missouri
Edvalson, Patrick Terry D.C.
Edwards, Carol Ann Va.
Edwards, Daniel Larey, Jr. Va.
B.S. 1954, College of Charleston
Edwards, Frank Tousley D.C.
A.B. 1950, Antioch College
A.M. 1955, Georgetown University
Edwards, Gordon Carlton Va.
B.S. in C.E. 1937, Worcester Polytechnic Institute
Edwards, Grant Campbell D.C.
Edwards, Howard Lee Utah
B.S. 1955, Brigham Young University
Edwards, Jack Warren Oreg.
B.S. in C.E. 1950, Oregon State College
Edwards, Marion Hall D.C.
Edwards, Paul August Va.
A.B. 1943, Wheaton College
B.D. 1950, Bethel College and Seminary
Edwards, Robert Frederick Va.
B.S. 1957, University of Maryland
Edwards, Virginia Lucile Va.
Edwards, William Henry D.C.
Edwin, Gabriel Md.
B.S. 1949, M.S. 1951, The George Washington University
Egbert, John Paul Md.
Egeland, Robert E. Md.
A.B. 1956, State University of Iowa
Egert, Elaine Esther D.C.
Eglington, Phebe Jane N.J.
Ehle, Arthur Kendrick Va.
B.S. 1927, U.S. Naval Academy
Ehlert, Sally Ind.
B.S. 1956, Butler University

Ehrhardt, Eugene John Mo.
B.S. 1955, Georgetown University
Ehrle, Raymond Albert N.Y.
A.B. 1951, Syracuse University
A.M. in Govt. 1956, The George Washington University
Ehrlich, Stanley D.C.
Ehrman, Joachim Benedict Pa.
A.B. 1948, University of Pennsylvania
A.M. 1949, Ph.D. 1954, Princeton University
Ehsan, Nadia D.C.
Ehsan, Nahed D.C.
Eid, Gamal Hassan D.C.
B. Comm. 1951, University of Cairo, Egypt
Eidson, Nora Laverne D.C.
Eigen, Sarah Moment Va.
Ph.B. 1932, University of Chicago
Eigler, Robert Leonard Va.
Eiklor, Eugene William Ill.
A.B. 1957, University of Illinois
Eilbeck, Robert William Pa.
Einarson, Gudrun Asta D.C.
Eisen, Jacob Nathan Md.
A.B. 1950, Brooklyn College
Eisenberg, Philip D.C.
A.B. 1957, The George Washington University
Eisenstein, Elliot Martin N.J.
B.S. 1956, Franklin and Marshall College
Eiserman, David Duane Va.
Eising, Donald Clifford D.C.
A.B. 1956, The George Washington University
Eisner, Jerome Md.
B.S. 1953, The George Washington University
M.S. 1956, Georgetown University
Ekendahl, Lillian Mabel Pa.
Ekhaus, Larry N.J.
Ekman, Florence Ethel D.C.
Elam, David Leon D.C.
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A.B. 1953, American University at Cairo
A.M. in Govt. 1955, The George Washington University
Elbert, Robert F. Va.
Elder, Chester Glen Md.
A.B. 1949, Glenville State College
Elder, Edward Reid D.C.
A.B. 1954, American University
Elder, Jo Ann D.C.
Elder, Teddy Max D.C.
B.S. in Ed. 1956, Western Illinois State College
Elder, Vernon David D.C.
Eldridge, Luella D.C.
Eldridge, Scott Magruder Va.
Elgin, Jerry Donald Md.
Elia, Earl George Va.
A.B. 1952, University of California at Los Angeles
Elias, Maxim Konrad D.C.
Elkin, Evelyn Va.
Elko, Helen Pa.
Eller, Robert Whittington Md.
B.S. 1951, D.C. Teachers College
A.M. in Ed. 1953, The George Washington University

Ellinger, William Belven D.C.
B.S. in Ed. 1955, Pennsylvania State Teachers College, Bloomsburg
Ellingsberg, Donald James N.D.
B.S. in I.E. and Mgt. 1955, North Dakota State College
Elliott, Claude Wayne D.C.
Elliott, Gilbert Steven Md.
Elliott, Jerry Deon Va.
A.B. in Govt. 1957, The George Washington University
Elliott, John Earle, Jr. Md.
A.B. 1956, The George Washington University
Elliott, John Edward Va.
A.B. in Govt. 1957, Waynesburg College
Elliott, Virginia N.J.
Ellis, Catherine Martha Md.
A.B. 1954, Trinity College
Ellis, David Allen Mo.
Ellis, Elizabeth Mueller Md.
A.B. 1942, University of Chicago
Ellis, Jack Woodrow Md.
B.S. in E.E. 1951, University of Arizona
Ellis, Russell Leo Md.
Ellis, William Charles Va.
Elrod, Warrick Elgin, Jr. D.C.
A.B. 1939, Harvard University
A.M. 1948, Northwestern University
Elsbernd, Lawrence Bernard N.D.
B.S. 1942, University of North Dakota
Elson, Quin Samuel Va.
A.B. 1956, The George Washington University
Elward, Mary Catherine Md.
A.B. 1953, Trinity College
Elwell, Richard Brans D.C.
A.B. 1953, University of Virginia
Ely Craig R. D.C.
A.B. 1957, Stanford University
Ely, Marvin Thomas W.Va.
A.B. in Ed. 1956, The George Washington University
Emanuel, Assefa Wolde Ethiopia
Emanuel, Margaret Ruth D.C.
B.S. 1937, University of Wisconsin
A.M. 1950, Columbia University
Emerson, Beula Marsdeen Williams D.C.
A.B. in Ed. 1956, Eastern Washington College of Education
Emerson, Harold Leonard Va.
A.B. 1953, A.M. 1956, The George Washington University
Emerson, Sylvia Elaine D.C.
Emken, Robert Allan Va.
B.S. 1951, University of Maryland
Emma, Paschal Joseph Md.
A.B. in Ed. 1952, The George Washington University
Emmert, Henry Theodore Va.
A.B. 1949, Augustana College
Emmett, William Joseph D.C.
Emory, Daniel Wright D.C.
Emory, Orville James, Jr. D.C.
A.B. 1954, The George Washington University
A.M. 1956, Leeds University, England
Encinias, Luis Gonzaga N.M.
Eney, Richard Harris Md.
Engberg, Norma Joyce Va.
Engel, Elaine Hudson D.C.
Engel, John Michael, Jr.
A.B. 1956, Catholic University of America
Engel, Mary Louise
Engelbart, Richard William
Engelbrecht, Henry Akers, Jr.
Engelhard, Sheldon
B.S. 1957, Lehigh University
Englehardt, Thomas Francis
A.B. 1950, University of Wisconsin
Enger, Stanley LaVern
England, James William
B.S. in P.E. 1953, The George Washington University
Englander, Rona Lynn
Engle, Edison Grove, Jr.
B.S. 1943, Pennsylvania State Teachers College, Millersville
Engle, Fred Jewel III
Engle, Lowell Lee
Engle, Samuel William
B.S. 1953, Pennsylvania State University
Engleberg, Bernard M.
Engleberg, Stuart Marlin
Engler, Asher
B.S. 1955, Ingenicur 1956, Israel Institute of Technology
Englert, Alvin John
B.S. 1957, Carnegie Institute of Technology
Engstrom, Jerald Noel
B.S. 1955, University of Utah
Enis, Peter
Enis, Ruth
Ennis, Michael
Ennis, Rachel
A.B. 1950, Western Maryland College
Enockson, Gene Oliver
B.S. 1954, Jamestown College
Eny, Nicholas Robert
B.S. 1948, Pennsylvania State University
Epstein, Barbara Lee
Epstein, Milton
A.B. 1948, New York University
A.M. 1953, The George Washington University
Epstein,Reuben
B.S. 1926, College of the City of New York
LL.B. 1932, The George Washington University
Epstein, Ruth
Epstein, William Harvey
A.B. 1955, B.S. in Ch.E. 1956, Columbia University
Epting, Elizabeth Jeanette
Erdman, Donald Alan
B.M.E. 1945, Rensselaer Polytechnic Institute
Erickson, Clark Allen
A.B. 1954, Ripon College
Erickson, Roger Wayne
B.S. in M.E. 1950, University of California
Ericson, Mary Karin
Ericson, William Lars
B.S. in I.M.E. 1951, University of Michigan
Eriksson, Kenneth Wayne
Ernsberger, Richard Duane
B.S. 1953, University of Tennessee

Ernst, Ann Va.
Ernst, Theodore Henry D.C.
Erps, Lucille Marie D.C.
B.S. 1948, University of Maryland
Ervin, John Sjearer Va.
Esau, Betty Jane D.C.
Eschmeyer, Barbara Jean Va.
Escobar, Mario Rene Ind.
A.B. 1954, University of Louisville
Esgain, Albert James Va.
B.S. and A.M. 1936, Ohio State University
LL.B. 1943, Duke University
Esgain, Mary Moore Va.
B.S. in Ed. 1938, Ohio State University
Eshelman, James Norman, Jr. D.C.
Eskin, Otho Evans D.C.
A.B. 1956. Bowdoin College
Esparolini, Luis Manuel Md.
A.B. 1953, The George Washington University
Espenschade, Park William, Jr. Md.
Esposito, Elia John Md.
A.B. 1945, College of the Pacific
M.S. 1948, University of Cincinnati
Espy, Billy James Ark.
B.S. 1951, University of Arkansas
Esser, Gertrude Anna Md.
Esser, William Bernard Va.
Esterlitz, Alvin Morton Pa.
B.S. in Ch.E. 1954, Drexel Institute of Technology
Estes, Harry Arthur, Jr. Va.
Esteve, Hector Manuel Cuba
Estridge, James Lee Md.
A.B. 1954, College of Wooster
Etteldorf, Joyce Ann Va.
Ettinger, Ralph John Md.
B.S. in E.E. 1949, Pennsylvania State University
Etzel, Robert Vincent Md.
Eufemio, Michael Anthony N.Y.
A.B. 1956, Cornell University
Evalle, Apolonio Saquilabon Philippines
B.S. in C.E. 1950, Far Eastern Universty, Philippines
Evangelista, Noli Cudal Philippines
Evans, Anne T. N.C.
A.B. 1953, Smith College
Evans, Boyd Alexander Va.
Evans, Carolyn June D.C.
Evans, Catherine Verne D.C.
A.B. 1955, Mills College
Evans, Diane Patricia D.C.
A.B. 1952, University of Richmond
Evans, Donald Bruce D.C.
Evans, Elizabeth Ellen Ohio
Evans, James Paul Va.
Evans, Janette Lazelle Va.
Evans, Jimmy Ross D.C.
B.S. 1947, Bishop College
Evans, John Burnison Va.
A.B. 1953, University of Virginia
Evans, John James Md.
A.B. 1951, Columbia University
Evans, John Walker D.C.
Ph.B. 1927, Yale University
A.M. 1939, New York University
Evans, Kenneth Hoge Oreg.
B.S. in Arch. 1953, University of Kansas
Evans, Kenneth James Md.
B.S. 1944, University of Maryland
Evans, Kurt Anthony Va.
Evans, Myron Thomas Ohio
B.S. 1927, U.S. Naval Academy
Evans, Patricia Joanne D.C.
Evans, Richard Louis Md.
Evans, Robert David Va.
Evans, Roy Lester Ind.
B.S. 1949, Indiana Central College
M.S. 1954, The George Washington University
Evans, Shirley Patricia D.C.
Evans, Walter Fontaine D.C.
Evans, William Benjamin, Jr. D.C.
B.S. 1940, University of Maryland
A.M. 1946, Columbia University
Evans, William Earl Md.
Evans, William George D.C.
A.B. in Govt. 1954, The George Washington University
Evans, William Henry, Jr. Md.
B.S. 1948, U.S. Naval Academy
Everett, Franklin Milton D.C.
B.S. 1950, The George Washington University
Everett, James Albert Va.
B.S. 1952, Alabama Polytechnic Institute
Everett, Katharine Kennedy D.C.
Everett, William Bryan, Jr. D.C.
Everett, Woodrow Wilson, Jr. Ala.
Evers, Joseph Adolph Calif.
B.S. 1953, University of California
Everson,George Waitman Va.
B.S. 1946, Fairmont State Teachers College
Evertsen, Gail Gertrude Wis.
Evins, Danny Wood Tenn.
Ewenstein, Martin Joel N.Y.
A.B. 1955, College of the City of New York
A.M. 1957, Columbia University
Ewing Joanne Ellen Bannister Iowa
Ewy, Constance Magdalene Minn.
A.B. 1941, A.M. in Govt. 1949, The George Washington University
Ewy, Gordon Allen Kans.
A.B. 1955, University of Kansas
Exelbert, Jack Joseph N.Y.
A.B. 1957, American University
Ezrin, Rhoda D.C.

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Fabian, Barbara Ann Pa.
Facnioli, Frank J. Md.
B.S. 1946, West Virginia Institute of Technology
Fackler, William Albert Va.
Fadem, Charles Va.
B.S. 1935, U.S. Naval Academy
Fagg, Lawrence Wellburn D.C.
B.S. 1945, U.S. Military Academy
M.S. 1947, University of Maryland
A.M. 1948, University of Illinois
Ph.D. 1953, Johns Hopkins University
Fagg, Simone Fastres Md.
A.B. 1948, A.M. 1949, The George Washington University
Ph.D, 1953, University of Maryland
Fahlstrom, Paul Gerin Va.
B. Aero. Eng. 1953, University of Minnesota

Fahnestock, Galen Ballinger Md.
B.S. 1950, Elizabethtown College
Ed.M. 1955, University of Virginia
Fahrner, Willard Floyd Md.
Fahrney, John William Va.
A.B. 1947, LL.B. 1949, The
George Washington University
Fahy, George Herbert D.C.
A.B. 1954, The George
Washington University
Fahy, John Bernard Md.
B.S. 1952, University of Maryland
Failer, Raymond Victor D.C.
B.S. 1955, University of Denver
Faircloth, John William Flood Md.
A.B. 1955, Harvard University
Fairweather, James Dunham Va.
Fairweather, Robert Scobie Va.
B.S. 1934, U.S. Naval Academy
Faizullah, Khan Afghanistan
Falardeau, Thelma Elaine D.C.
Falbo, Samuel Diaz Md.
Falcone, Joseph Va.
Falk, Beverly Jeanne D.C.
Falk, David Mortimer R.I.
B.S. 1943, M.S. 1947, Massachusetts
Institute of Technology
Falk, Julian Pa.
B.S. 1957, Pennsylvania State University
Faller, Rodney Louis Md.
B.S.E. 1957, University of Maryland
Fallon, Pauline Frances D.C.
Falls, Cynthia Washburn D.C.
Falls, Cyrus Thompson, Jr. Fla.
Fan, Francis Tung-Chung China
Fanaroff, Arnold Joel D.C.
Fang, Ai-Chun China
B.S. 1944, National Sun-Yat-Sen
University, China
Fang, Chao-Kai Va.
B.S. 1944, National Sun-Yet-Sen
University, China
Fanning, Paul Anthony D.C.
Farber, Irving Va.
B.S. 1953, Rutgers University
Fardad, Ali Iran
Farhoury, Abdullatif D.C.
Farino, Salvatore Louis Pa.
A.B. 1953, Duquesne University
Farkas, Gloria Margarette N.J.
Farland, Robert John D.C.
B.S. in E.E. 1951, University of
New Hampshire
Farley, John Joseph Va.
Farley, Suzanne D.C.
Farmakides, John Basil Ohio
B.S. 1950, Western Reserve University
LL.B. 1956, The George Washington
University
Farmer, Marion Lee D.C.
A.B. 1951, University of California
at Los Angeles
Farnsworth, Richard Burton D.C.
A.B. 1935, University of Montana
A.M. 1941, Stanford University
Farnsworth, William Yates Va.
A.B. 1953, Brigham Young University
Farquhar, Thomas Walsh D.C.
Farr, Robert Thomas Va.
Farrall, James Emanuel Md.
Farrell, John Richard Conn.
B.S. 1955, University of Bridgeport

Farrell, John Roger Mo.
B.S. 1951, U.S. Naval Academy
Farrell, Katherine Louise Md.
Farrell, Thomas Edmonston Va.
Farrell, Thomas George Pa.
A.B. 1954, Pennsylvania State
University
Farris, John Clyde Va.
Farris, Junia Jessie Va.
B.S. in Ed. 1951, Radford College
Farserotu, Michael D.C.
Fash, Frank Joseph Md.
Fassberg, Harold Edward Va.
A.B. 1940, Ohio State University
A.M. 1942, University of Pittsburgh
Fassett, Jean Warner D.C.
Fatiadi, Alexander Johann D.C.
B.S. 1957, The George Washington
University
Fauley, Arthur Berkley Md.
A.B. 1949, Fairmont State College
A.M. 1950, West Virginia University
Fauntleroy, Gwendolyn Middleton D.C.
B.S. 1947, D.C. Teachers College
Faust, Arland Kenneth Kans.
A.B. 1955, University of Kansas
Faust, Ruth S. Md.
A.B. 1931, Rutgers University
Faust, Wilda Freebern D.C.
A.B. 1929, Iowa State Teachers College
A.M. 1943, University of Florida
Favorit, Ronald William Md.
B.S. in E.E. 1952, North Dakota
Agricultural College
Favre, Donavon Lee Ill.
B.S. 1952, University of Illinois
Favre, Pierre Andre Va.
Fay, Eleanor Therese Pa.
A.B. 1957, The George Washington
University
Fay, Elvir Anthony Texas
A.B. 1956, Texas Western College
Fay, Marianne Alexis D.C.
Fazekas, Victor Hungary
Feagin, Jefferson Ball Va.
Fearer, William Hugh Md.
Featherall, Marjorie Anne Pa.
Febrey, Albert William, Jr. Va.
A.B. 1953, The George Washington
University
Feddersen, Ralph Henry Va.
A.B. 1940, The George Washington
University
Federline, Charles Albert Md.
Federline, James Durwood Md.
Fediay, Victor A. D.C.
Feeherry, Thomas Francis Mass.
Feeney, Edward Jude D.C.
A.B. 1951, St. Anselm's College
Fees, James Richard D.C.
A.B. 1957, University of Notre Dame
Feijoo, Julio S. D.C.
Feik, Jerome John D.C.
A.B. 1951, Marietta College
B.S. in F.S. 1953, Georgetown
University
Feinglass, Joel Byron Md.
Mus. B. 1955, Curtis Institute
of Music
Feinroth, Herbert D.C.
B.S. in Ch.E. 1957, University of
Pennsylvania

Feinstein, Bernard D.C.
A.B. 1954, University of Colorado
Feit, Robert Edward Ill.
B.S. in C.E. 1954, University of Notre Dame
Feit, Ronald Md.
B.S. in M.E. 1950, University of Texas
Feix, Donald Conrad Va.
B.S. 1952, Purdue University
Fela, George Henry D.C.
A.B. in Govt. 1953, The George Washington University
Felber, Annette Diana D.C
Feld, Benjamin Md.
B.S. 1937, College of the City of New York
LL.B. 1941, S.J.D. 1945, Brooklyn Law School
Felder, Clarice Rose D.C.
A.B. 1956, The George Washington University
Felder, Edward Ralph D.C.
Feldman, David Edwin D.C.
Feldman, Edmund Henry Md.
A.B. 1954, J.D. 1957, The George Washington University
Feldman, Frances Bran Md.
A.B. 1956, The George Washington University
Feldman, Linda Daly N.Y.
Feldman, Melvin Louis D.C.
Feldman, Sheldon Md.
A.B. 1957, The George Washington University
Feldmann, John Arthur Fridolin Conn.
A.B. 1954, Harvard University
Felegy, Edward Moody Pa.
Fellner, Azriel Chaim D.C.
Fellows, Charles Warrenton, Jr. Fla.
B.S. 1949, Virginia Polytechnic Institute
Felmet, Fred M., Jr. Md.
A.B. 1939, College of William and Mary
Ed.M. 1952, Boston University
Felshman, Neil I. Va.
Felter, Marion Loretta D.C.
Felton, Jean Wheeler Va.
B.S. 1948, Virginia State College
Femia, Vincent James D.C.
Fendig, Nathan Lewis N.Y.
Fenier, Joseph Va.
B.S.E. 1950, U.S. Naval Academy
Fenstad, Harry Robert N.J.
Fenton, Barbara Lorraine Md.
Fenton, Edith Margaret D.C.
Fenton, Helen D. Va.
A.B. 1929, State College of Washington
Fenton, Paul Thomas, Jr. Md.
Fenton, William Francis D.C.
A.B. 1951, Texas Christian University
Fentress, Alvin Kirkwood Va.
Fentress, Carole Ann D.C.
Fentress, David Fla.
Ferguson, Alberta Lawson D.C.
B.S. 1954, D.C. Teachers College
Ferguson, Nadine Linda D.C.
Ferguson, Richmond Heath Pa.
A.B. 1953, St. Vincent College
Ferman, Bertha Paglin Md.
B.B.A. 1942, Tulane University

Fernandez, Antonio Manuel, Jr. D.C.
B.S. 1951, U.S. Naval Academy
LL.B. 1956, Georgetown University
Fernandez, Fausto Daniel Juan Cuba
Feroli, Edward Joseph Mass.
B.S. 1955, Massachusetts College of Pharmacy
Ferrara, Angelo Arthur Md.
Ferrara, Carl Vincent Ohio
A.B. 1957, Kent State University
Ferrara, William Frank Va.
B.S. 1953, Webb Institute of Naval Architecture
Ferrari, May Isabelle D.C.
Ferrell, Jane Brower Va.
Ferrell, Mamie Wilson Va.
B.S. 1930, M.S. 1933, Oklahoma Agricultural and Mechanical College
Ferrell, Walter Harold Va.
Ferrer, Jose D. D.C.
Ferretti, Irmgard Josephine D.C.
Ferrians, Oscar John, Jr. Va.
B.S. 1952, State College of Washington
Ferrill, Grace Cecelia R.I.
A.B. 1948, LL.B. 1950, The George Washington University
Ferris, Diane Margaret N.Y.
Ferris, Joseph Edward Va.
Ferris, Mary Alice Md.
Ferris, William Joseph Md.
Ferro, Margarita Olga D.C.
Ferro, Ramona Elia D.C.
Ferry, Henry Justin Md.
Fessenden, John Stirling Maine
A.B. 1952, Dartmouth College
Fetchko, Joseph Andrew Md.
B.S. 1952, U.S. Merchant Marine Academy
Fetta, Frank Louis Va.
A.B. 1954, Providence College
Fetters, William Brooke Md.
B.S. 1950, Indiana University
Feuer, Semi D.C.
Feula, James Joseph D.C.
B.S. in P.E. 1951, A.M. in Ed. 1955, The George Washington University
Fey, Albert Eugene Mich.
B.S. in M.E. 1955, University of Michigan
Fey, Nancy Jane Ill.
Feyen, Leotta Cook Va.
Fichter, Curtis Leroy Md.
B.S. in F.S. 1948, Georgetown University
Fidandis, Nicholas Andrew Va.
Field, Lillie Lee D.C.
Field, Naninka Barbara N.Y.
Field, Pattie H. Colo.
A.B. 1923, Radcliffe College
A.M. 1951, American University
Field, Thomas Sullivan Va.
B.S. 1953, Georgetown University
Field, William Hull D.C.
Fielding, Fred Chase Md.
Fields, Gary Dee Ill.
B.S. 1956, Iowa State University
Fields, Mary Anne Va.
A.B. in Ed. 1956, The George Washington University
Fields, Roland Carmel Va.
A.B. 1950, The George Washington University

Fien, Margaret Ely Va.
Fife, William Paul Va.
B.S. 1956, University of Oregon
Figley, Robert Louis N.C.
Figueiredo, Aureo Pinto D.C.
Figueroa, Katherine Md.
Figuers, Horace Howard Tenn.
B.S. 1940, U. S. Naval Academy
Fikry, Laila Egypt
Filcik, Julius Paul Va.
B.S. in Ed. 1953, Pennsylvania State Teachers College, Indiana
Filipovitch, Svetlana D.C.
Filleman, Walter Spence Va.
A.B. 1957, San Francisco State College
Fillmore, William Carr Md.
B.S. 1950, U. S. Naval Academy
Filsinger, Ruth Isabel D.C.
A.B. 1954, The George Washington University
Finberg, Joseph Va.
Findlay, Andrew Morrison D.C.
Findlay, Cuyler Whittle Va.
A.B. 1955, Mercer University
Findley, Harry Wilson Va.
B.S. 1939, University of South Carolina
M.B.A. 1949, Harvard University
Findley, John Derrick Va.
Fine, Eleanore Baker Va.
Fine, Martin Brian Md.
A.B. 1951, University of Connecticut
Finelli, Vincent Nicola Mass.
Fink, Ann Negus Va.
Finkel, Mitchell Wolf D.C.
Finlay, Diane Md.
Finlay, Helen King Va.
A.B. 1945, Huntingdon College
A.M. in Ed. 1947, The George Washington University
Finler, Joel Waldo D.C.
Finnell, Robert Francis Md.
Finney, Barbara Slatry Va.
Finney, Charles Narber D.C.
Finnin, Carol Ann D.C.
Fiorillo, Richard Joseph Pa.
B.S. 1956, St. Joseph's College
Firda, Geraldine Joanne Md.
Firda, Richard Arthur D.C.
Firestone, David Va.
B.S. 1946, College of the City of New York
M.S. 1951, Brooklyn Polytechnic Institute
Firey, Jane Judge D.C.
Firsht, Winifred Catherine Va.
Firth, Francis Joseph Va.
B.S. 1921, U. S. Naval Academy
Firth, Lewis Raymond Va.
Fischer, Herman Paul D.C.
Fischer, Lynn Frederick Ill.
Fischer, Marian Hamilton D.C.
A.B. 1957, University of Maryland
Fischer, Norman N.Y.
Fischer, Philip Benjamin Md.
A.B. 1956, Adelphi College
Fischer, William Joseph D.C.
Fischgrund, Marion Doris Md.
Fischman, Richard Hale N.Y.
Fish, Elizabeth Doreene Va.
A.B. 1943, Marshall College

Fishback, James Frederick Md.
Fishel, Gladys Leech Va.
A.B. 1954, A.M. 1956, The George Washington University
Fisher, Albert Teal Pa.
A.B. 1955, Hobart College
Fisher, Angelina Carli D.C.
Fisher, Beverly Estelle D.C.
Fisher, Dorothy Anne D.C.
A.B. 1949, Mary Washington College
A.M. 1952, University of Virginia
Fisher, Gail Feimster Md.
A.B. 1949, A.M. 1951, University of Maryland
Fisher, John Gibson Va.
Fisher, Kathryn Dolores Va.
Fisher, Lillian Jemtegaard Va.
A.B. 1931, University of California
Fisher, Louis Joseph Va.
Fisher, Martha Claire Va.
Fisher, Martha Magdalene D.C.
Fisher, Nancy Lee D.C.
Fisher, Patricia Ann Va.
Fisher, Thomas Malcolm Va.
B.S. 1951, Virginia Polytechnic Institute
Fisk, Leon Waterbury Md.
B.S. 1949, Georgetown University
Fitch, Lewis Thomas Md.
B.S. in E.E. 1954, Duke University
Fitez, Geraldine Marie D.C.
A.B. 1929, Washington College
A.M. 1947, The George Washington University
Fittipaldi, Joseph Robert N.J.
Fitts, Nathan Cheney Md.
A.B. 1939, Amherst College
LL.B. 1948, Harvard University
LL.M. 1956, The George Washington University
Fitzgerald, Edward Patrick D.C.
B.S. in B.A. 1955, Boston College
Fitzgerald, Gerald Arthur D.C.
Fitzgerald, Geraldine Anne D.C.
Fitzgerald, Helen D.C.
Fitzgerald, James Joseph Md.
Fitzgerald, Richard Edmund Mass.
A.B. 1954, Georgetown University
Fitzgerald, William Francis Md.
B.S. 1952, Boston University
Fitzpatrick, Daniel Joseph Md.
B.S. 1949, Georgetown University
Fitzpatrick, Edward James Md.
Fitzpatrick, Larry Gene D.C.
Fitzpatrick, Paul Michael Va.
Fitzwater, Ivan Welton Fla.
B.S. in P.E. 1955, The George Washington University
Fives, Regina Mary Md.
Fix, David Washabaugh D.C.
Flagg, Barbara Lee Va.
Flaherty, Robert John, Jr. D.C.
B.S. in E.E. 1949, Virginia Polytechnic Institute
Flaherty, Thomas F. Md.
B.S. 1955, Georgetown University
Flaherty, Thomas Mylotte D.C.
B.A.E. 1946, Rensselaer Polytechnic Institute
Flammer, Philip Meynard Md.
A.B. 1953, Utah State Agricultural College Neb.

Flanagan, Patricia Fay Md.
Flanagan, Robert Morse Md.
Flanigan, Michael John D.C.
Flatley, Virginia Saunders Md.
B.S. 1929, Asheville-Biltmore College
Fleck, Glenna Agnes Va.
Flehr, Paul Harry Calif.
A.B. 1957, San Jose State College
Fleming, John Rodgers D.C.
Fleming, Peter Alan Calif.
A.B. 1956, San Diego State College
Fletcher, Ann Hardy Md.
Fletcher, Emily Frances Md.
Fletcher, Oscar Gatica D.C.
Fletcher, Thomas William Va.
A.B. 1951, College of Wooster
Fletcher, Virginia Faye D.C.
Flicek, Jerry Francis Minn.
B.S. 1956, University of Maryland
Flick, Charles Richard Md.
Flick, Donald Franklin W.Va.
A.B., M.S. 1947, West Virginia University
Flick, Robert George Va.
A.B. 1954, Pennsylvania State University
Flicker, Jon Richard N.J.
Flickinger, Ida May Va.
A.B. 1931, Oberlin College
A.M. 1932, Columbia University
Flickinger, Mary Jane McHale D.C.
Flieger, Howard Wentworth, Jr. D.C.
B.S. 1952, B.S. in Eng. 1955, The George Washington University
Flocken, Janet Sue D.C.
Flood, James Joseph, Jr. N.Y.
A.B. 1953, University of Notre Dame
Florani, Marcello Federico Italy
Flores, Rudolph Alfred Ohio
B.S. 1954, University of Toledo
Flory, Henry Lee Va.
Flournoy, Rebecca Clifton N.C.
Flowe, Robert Thomas Va.
B.S. 1952, University of South Carolina
Flowers, Earl Crama Md.
Floyd, Harold Leopold Md.
Flury, Mary King Va.
A.B. 1954, Wheaton College
Flury, William Robert N.J.
A.B. 1954, Princeton University
Flynn, John Joseph Pa.
Flynn, Joseph Earl D.C.
A.B. 1954, The George Washington University
Flynn, Lucine Hansz Md.
Flynn, William John D.C.
Foard, George Edward Va.
Foelak, Morton N.Y.
B.S. 1953, Brooklyn College
Foerster, Herbert G. D.C.
Foerster, Paul Adolph Texas
B.S. in Ch.E. 1957, University of Texas
Folcik, Helen Anne Pa.
Foldenauer, Robert Carl Va.
A.B. 1952, The George Washington University
Foley, John Augustine N.Y.
A.B. 1938, Manhattan College
Folio, Joseph Roger N.Y.
B.S. in M.E. 1937, M.S. in C.E. 1952, Carnegie Institute of Technology
Folk, John William Va.
Folliard, Nancy Rose D.C.
Foltz, Frances Marion N.Y.
Foltz, Jack Lloyd Ind.
B.S. in Ch.E. 1957, Rose Polytechnic Institute
Fondaw, Mary Jannis Ala.
Fondersmith, Elva Harman Md.
Fong, James D.C.
Fong, Louis Brockway Chen Md.
B.S. in E.E. 1935, Massachusetts Institute of Technology
Fong, William Der D.C.
Fonner, George Shuman D.C.
Fonseca, Anthony Mass.
B.S. 1953, New Bedford Institute of Technology
Fontaine, Robert Richard Md.
Foo, Vincent Thomas D.C.
Foote, Rona Johanne D.C.
Footer, Sheila D.C.
Forbes, Charles Sidney, Jr. D.C.
A.B. 1957, The George Washington University
Forbes, Donald Poetting Va.
Forbes, Howard Walter D.C.
Forbes, John Perry, Jr. Va.
Forbes, Lela Mattox Va.
Forbes, Rodney Raymond D.C.
A.B. 1950, University of Notre Dame
A.M. 1951, Ohio State University
Forbes, Shirley Ann Va.
Forcione, Eugene Ashby Md.
Forcum, James Evans Md.
A.B. 1950, A.M. 1954, The George Washington University
Ford, Anita Margaret Md.
Ford, Bette Sue D.C.
Ford, Elinor Caldwell D.C.
B.S. 1949, Morgan State College
Ford, Phyllis Wheatley D.C.
B.S. 1936, D.C. Teachers College
Ford, Sondra Anne Va.
Fordham, Norma Jean Va.
B.S. 1953, University of Vermont
Forehand, Juanita Laverne Fla.
Foreshew, Mary Katherine Va.
Foresman, Nancy Jo D.C.
Forjonel, Andrea Marie D.C.
A.B. 1954, American University
Forkner, Leone Prochnow Va.
B.S. in H.E. 1945, A.M. in Ed. 1946, The George Washington University
Forman, Kathryn B. Knox D.C.
Forman, Virginia Paris D.C.
Formica, Joseph Victor Md.
B.S. 1953, M.S. 1954, Syracuse University
Forms, Charles Henry Md.
Forrer, John Osborne D.C.
A.B. 1957, Oberlin College
Forrester, Ada Wilma Miss.
Forshee, Jean Carroll Va.
Forssell, Alan Gustav Va.
B.S. in N.A. and M.E. 1953, Webb Institute of Naval Architecture
Forssell, Robert Marks N.Y.
B.S. in N.A. and M.E. 1955, Webb Institute of Naval Architecture
Forssell, Shirley DeLyne Va.
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A.B. 1945, Willamette University
A.B. 1950, A.M. 1952, University of Washington
Forsythe, Rosemary Ind.
A.B. 1954, Indiana University
Fort, Anna Beulah D.C.
B.S. 1944, D.C. Teachers College
A.M. in Ed. 1951, The George Washington University
Forte, Russell Thomas D.C.
Forthofer, Robert John Va.
B.S. in M.E. 1940, Purdue University
Fortner, Stanley Wayne D.C.
Foshee, Lonnie Lemuel Va.
B.S., A.N. 1950, Southwestern State College
Foss, Mary Louise D.C.
Foster, Edwin Stanton Md.
B.S. 1925, University of Illinois
Foster, Margaret Surbeck Ohio
Foster, Mary Ellen Pa.
Foster, Robert Mitchell Md.
B.S. 1951, University of Maryland
Foster, William George N.J.
B.S. 1948, Drexel Institute of Technology
Fouche, James Edwin Va.
A.B. in Ed. 1955, The George Washington University
Foucher, Gerald Lionel Mass.
Fouches, Nancy Jacqueline Va.
Foulser, David Arthur Va.
A.B. 1955, Ohio State University
Fouquet, David D.C.
Fournier, Geneva Maine
A.B. 1951, St. Joseph's College, Maine
Foust, Lois Beverly Va.
Fowler, Janet Marie N.Y.
A.B. 1953, Cornell University
Fowler, Katherine Swann D.C.
A.B. in Ed. 1933, The George Washington University
M.Mus. 1938, Catholic University of America
Fox, Anita Marlene D.C.
Fox, Carol Joan W.Va.
Fox, Craig Lambert Va.
Fox, Jerome N.Y.
A.B. 1953, Clark University
Fox, Johanna Deborah D.C.
Fox, John LeRoy D.C.
Fox, Marlys Darlene S.D.
B.S. 1955, South Dakota State College of Agriculture and Mechanic Arts
Fox, Marvin Herbert D.C.
Fox, Paul Wayne D.C.
Fox, Phyllis Joan D.C.
Fox, Sandra Jean Ind.
Fox, Saul Aaron Md.
Fox, Toby D.C.
Fox, Walter Victor, Jr. Md.
Fox, William George Md.
M.E. 1952, Stevens Institute of Technology
Fox, William Lloyd D.C.
A.B. 1943, A.M. 1945, Western Reserve University
Fox, William Raymond Md.
B.S. in P.E. 1954, The George Washington University
Foxwell, Milton Edward Md.
Foy, Allan Bernard Md.
A.B. 1951, University of Maryland
Foy, Annie Velma Texas
A.B. in Ed. 1956, The George Washington University
Foye, Joseph Francis Mass.
Fradkel, Abner N.Y.
Fradkin, Albert Irwin N.Y.
Fradkin, Robert Lee N.Y.
Frain, Henry Hugh Md.
Frakes, James Fisher Va.
B.S. 1943, U. S. Military Academy
Fraley, Frederick William III Ohio
A.B. 1954, Princeton University
J.D. 1957, University of Michigan
Fram, David Hirsch D.C.
Frame, Clyde Douglas Md.
A.B. 1950, Washington Missionary College
Frame, James Maurice Md.
Frame, Robert Mulliner D.C.
Franceschetti, Alfred Paul N.Y.
B.S. 1952, University of Georgia
Francis, Frances Consuelo D.C.
Francois, Francis Bernard Iowa
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Law Degree 1935, Comensky University, Czechoslovakia
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Frank, Louis Lloyd N.H.
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Frank, Rose Magdalene Wis.
Frank, Stratton Michael Fla.
Frank, William Peter D.C.
Franke, David Monroe Texas
Franke, John H. Md.
A.B. 1952, St. Johns College
Franke, Lewis D.C.
Frankel, Charles Louis Ill.
A.B. 1954, M.B.A. 1956, Harvard University
Franken, Marion Estelle Wis.
Frankfeldt, Carol Patricia D.C.
Franklin, Daniel Tobias D.C.
A.B. 1956, The George Washington University
Franklin, Donald Groves Va.
Franklin, Edwin Abbott, Jr. D.C.
Franklin, George William Md.
B.S. 1938, D.C. Teachers College
A.M. 1951, New York University
Franklin, Henrietta Brown Md.
B.S. in Ed. 1934, Boston University
A.M. 1936, New York University
Franklin, James Ryud Pa.
Franklin, Robert Orr Texas
B.S. in E.E. 1957, Vanderbilt University

Franklin, Wesley Charles Fla.
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Franklin, William Henderson, Jr. Va.
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Franzen, Earl LeRoy D.C.
B.S. 1957, University of Maryland
Fraser, Donald Ross Md.
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LL.B. 1954, The George Washington University
Franzone, Rosemary Ruth Md.
Frazee, Arlene Alberta D.C.
Frazier, Robert Isaac D.C.
A.B. 1955, Waynesburg College
Freas, Howard Jacob, Jr. Pa.
A.B. 1950, A.M. 1951, Temple University
Frederick, David Eugene Md.
B.S. 1955, University of Maryland
Frederick, Robert Martin Md.
Free, Frank Harrison Va.
Freed, Hanna Lee D.C.
Freedman, Harley Gail Mass.
Freedman, Irving Melvin Mass.
B.S. in E.E. 1954, Northeastern University
Freedman, Irwin Stanley Md.
A.B. 1955, Haverford College
Freedman, Lewis Minn.
B.S. 1934, U. S. Naval Academy
Freedman, Phyllis Rita Mass.
A.B. 1956, Boston University
Freeh, William Lambert Pa.
B.S. in M.E. 1957, University of Dayton
Freehof, Joan Gloria D.C.
A.B. 1954, University of Maryland
Freeman, Aaron Eliot Md.
A.B. 1951, M.S. 1955, The George Washington University
Freeman, Edward James D.C.
A.B. 1954, Johns Hopkins University
Freeman, Edward Neil Wash.
B.S. in E.E. 1950, Colorado State University
Freeman, John Franklin Md.
A.B. 1948, Pennsylvania State University
Freeman, Joseph H. Md.
A.B. 1936, A.M. 1937, Clark University
Freeman, Juanita Luckett D.C.
A.B. 1946, Pacific Union College
Freeman, Preston Garrison Md.
B.S. 1955, Morgan State College
Freeman, Virginia Lee D.C.
Fregien, Carol Leontine D.C.
Frehse, Laura Belle D.C.
Freidin, Alan Barry D.C.
Freilich, Arthur N.Y.
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French, Ian MacLaren Md.
French, James Hoagland, Jr. W.Va.
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Frenk, Jose Luis D.C.
Freseman, Alan Franklin Md.
Fresh, John Norman Md.
B.S. in A.E. 1950, Johns Hopkins University

Fretwell, Mary Virginia D.C.
Fretz, Elizabeth Anna Md.
Freundlich, Susi D.C.
Fribush, Martin J. N.Y.
A.B. 1952, Hamilton College
Frich, John Carl Pa.
Fricka, Ronald Joseph Ill.
Fried, Carol Ann N.J.
Fried, Esther D.C.
Fried, Morton George N.Y.
A.B. 1957, New York University
Fried, Peter Alexander Va.
A.B. in Govt. 1957, The George Washington University
Friedenberg, Brenda Sue D.C.
Friedlander, Harriette Bette D.C.
Friedlander, Harry Va.
Friedman, Arnold Wis.
B.S. 1949, Marquette University
Friedman, Donald Seymour Md.
B.S. 1951, Washington University
Friedman, Joel Va.
Friedman, John Marshall D.C.
B.S. 1953, University of Maryland
Friedman, Linda Sandra N.Y.
Friedman, Nathaniel Ill.
Friedman, Sidney D.C.
B.S. 1935, Long Island University
A.M. 1937, Columbia University
Friend, Allen Hovey Va.
Friend, Arthur Thomas D.C.
B.S. 1955, University of Pennsylvania
Friend, George Samuel Va.
B.S.E. 1936, Princeton University
Frinski, Mary Ill.
Fritsche, Carl Craig Va.
B.S. 1953, Washington and Lee University
Fritts, Lowell Ross Md.
B.S., A.B. 1953, Shepherd State College
Fritz, Carl Edwin, Jr. Del.
A.B. 1952, Hiram College
Frost, Robert Lee Va.
A.B. 1950, Maryville College
M.S. 1952, B.S. 1956, Louisiana State University
Froyd, Warren William Va.
Fruit, Claudia Jane Va.
Frulla, Robert Joseph N.Y.
Frushour, Harry Vernon Md.
A.B. 1942, Ed.M. 1946, Western Maryland College
Fry, Barbara Cooper Va.
B.S. 1957, Madison College
Fry, Dennis William D.C.
Fry, Harvey Judson III Texas
Fry, Roy Alexander Va.
A.B. 1950, Iona College
A.M. in Ed. 1956, The George Washington University
Fryberger, Fay Elaine Nev.
A.B. 1950, University of Nevada
Frye, Daisy Virginia D.C.
B.S. 1956, D.C. Teachers College
Frye, Edna Foster D.C.
B.S. 1950, D.C. Teachers College
Frye, Frances Louise Ill.
Frye, Martha Elizabeth Va.
A.B. 1943, Oberlin College
Fryer, William Thomas III Md.
B.S. in E.E. 1955, Lafayette College

Frvrear, James Ralph Md.
  B.S. 1954, Linfield College
Fuchs, Mary D.C.
  A.B. 1930, Hunter College
Fuenzalida, Hector Mario D.C.
Fufla, Joan Pa.
Fugh, John Liu D.C.
  B.S. in F.S. 1957, Georgetown University
Fugon, Enrique Jose Nicaragua
Fuhr, William Robert, Sr. D.C.
Fuka, Otto John, Jr. Ill.
  B.S. 1954, U. S. Naval Academy
Fulcher, Frances Lee D.C.
Fulcher, George Goodwin, Jr. Va.
Fuller, Gregory Alston Md.
  B.S. in F.S. 1954, Georgetown University
Fuller, Linn Campion Pa.
Fuller, Robert Lannes D.C.
  A.B. 1939, Bates College
  A.M. 1941, Boston University
Fuller, Vernon Jack Md.
  B.S. 1951, University of Maryland
  M.S. 1953, The George Washington University
Fullerton, Constance Hartwell Va.
  A.B. 1950, Wheaton College
Fullerton, Jacqueline Marie Md.
Fullmer, James Clark N.J.
Fulton, George Leonard II Ind.
  A.B. 1954, Hanover College
Fulton, Kenneth Aloysius Pa.
Fulton, Mary Baillie Md.
  B.S. 1942, M.S. 1944, Columbia University
Funkhouser, Curtis Lee Va.
Funston, Edward Hogue III Kans.
Funston, Sandra Scharbach Ind.
Fuqua, Earl William Va.
  B.S. 1945, U. S. Military Academy
Furber, Mildred Mass.
Furgerson, Evelyn June Va.
Furr, Ruby Lydia Texas
Furr, Shirley Page Va.
Fusco, Jeremiah Nicholas Md.
  A.B. 1935, Columbia University
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Gabby, Geraldine Kay Calif.
  A.B. 1955, University of Redlands
Gabel, Louise Kohn G. Va.
  A.B. 1941, Hunter College
  M.S.W. 1949, Harvard University
Gabel, Raymond Lewis Md.
Gabor, Andrew John D.C.
  A.B. 1956, The George Washington University
Gabossy, Paul Laszlo Va.
Gabriel, Irene Jones Calif.
Gaddy, Arthur Franklin, Jr. Va.
Gadsby, Susan Elizabeth Mass.
Gaerlan, Jaime Angeles D.C.
Gaffey, Marion Handke Md.
  B.S. 1949, University of Minnesota
Gagne, Walter Arthur, Jr. Va.
  B.S. 1950, University of Connecticut
Gagnon, John Alfred Md.
  B.S. 1952, Arnold College
  M.S. 1956, The George Washington University

Gailbreath, Mary Nell
Gaines, Edith Eleanor
Galandio, Eugene Anthony
  B.B.A. 1958, St. Bonaventure University
Galanto, Fred John
  A.B. 1949, Clark University
  Diplome 1951, University of Paris
Gale, Dawn Judith
  A.B. 1957, Catholic University of America
Galinni, Alfred John
Galindo, Juan De Arco, Jr.
  B.S. 1957, College of Javier, Panama
Galisky, Albert Joseph
Gall, Robert Michael
Gallagher, Ellen Anne Corthell
Gallagher, Gail Clara
Gallagher, John Edward
Gallagher, Martin Thomas
Gallagher, Michael Graham
Gallagher, William Michael
Gallant, John Joseph
Gallant, Milton
  A.B. 1957, Rutgers University
Gallant, Sheila Doris
Galles, Thomas Edward
  B.S. in E.E. 1950, Marquette University
Galloway, Barbara Jo
Galusha, June Elizabeth
Galvin, Joan Leslie
Galvin, Merle Nan
Galvin, Walter Corlett
  B.S. in C.E. 1956, Lehigh University
Galvins, Janis Alfreds
Gambello, Anthony Vincent
  B.C.E. 1951, Brooklyn Polytechnic Institute
Gambino, Robert William
  A.B. 1951, University of Virginia
Gandia-Guzman, Miguel Angel
  B.B.A. 1950, University of Puerto Rico
  M.B.A. 1953, University of Pennsylvania
Ganeshan, Ganapathi
  B.S. 1937, University of Rangoon
Gang, Florence Rabinowitz
Ganser, Anne Noonan
  A.B. 1954, Indiana University
Gant, Vivian
Gantz, Frank Elwin, Jr.
Gantz, Gertrude Soule
  A.B. 1935, Yankton College
  A.M. in Ed. 1951, The George Washington University
Gantz, Sally Soule
Ganz, Joel S.
  B.S. 1957, Bethany College
Garafola, Joseph Ralph
  B.S. 1949, University of California
Garber, Harold Gregory
  A.B. 1938, Washington University
  A.B. 1948, University of California at Los Angeles
Garber, Marie Macaulay
  A.B. 1945, University of Wisconsin
Garberina, James Francis
  A.B. 1955, LaSalle College
Garbow, Melvin Carl
  B.S. 1955, Purdue University
Garbrick, Lee Harrington
  B.S. in E.E. 1954, Pennsylvania State University
Garcia, Celina
Garcia, Edward Adolph

Garcia, Margaret	Calif.
B.S. 1956, University of California	
Garcia, Raymond	Md.
Garcia, Ronnie Ernest	D.C.
Gardella, Mary Catherine	Mass.
A.B. 1940, Emmanuel College	
A.M. 1953, Catholic University of America	
Gardes, John Patrick	Va.
Gardner, Allen Stiles	Md.
B.S. 1956, College of William and Mary	
Gardner, Ann Kelly	Md.
B.S. 1956, Murray State College	
Gardner, Betty Marie	Md.
B.S. 1954, Maryland State Teachers College	
Gardner, Fred Eugene	Md.
Gardner, Laurence Frederick	Va.
A.B. 1957, Dartmouth College	
Gardner, Lyle James	Va.
Gardner, Thelma Elizabeth	D.C.
B.S. 1939, Morgan State College	
Gardner, Wilbur Lewis	Va.
Garey, Kari J.	Norway
Garey, Thomas Martin	Fla.
Garfield, Walter Jerome	D.C.
Gargus, James Leon	D.C.
B.S. 1950, M.S. 1954, The George Washington University	
Garick, Jean Keech	Va.
Garland, Jo-Ann	Va.
Garlock, Donald William	D.C.
Garman, Ray Fillmore	D.C.
A.B. 1957, Johns Hopkins University	
Garner, Claudia Lorraine	Md.
Garner, Frances Lewis	Va.
B.S. 1928, Mary Washington College	
Garner, Leona Freida	D.C.
Garner, Paul Marvin	D.C.
Garner, Robert Wright	D.C.
Garner, Suzanne S. T.	D.C.
Garnes, Vauda Hall	D.C.
B.S. 1952, D. C. Teachers College	
Garnett, Janice Forsythe	D.C.
B.S. 1955, D. C. Teachers College	
GaroFalo, Ferdinand Peter	D.C.
Garretson, William Wendell	Iowa
A.B. 1956, Iowa Wesleyan College	
Garrett, Elizabeth Anne	Va.
Garrett, Lewis Fletcher	Va.
A.B. 1949, Coe College	
Garrett, Marie Crogan	Va.
A.B. 1938, Hunter College	
Garrett, Paul Weatherly	D.C.
A.B. 1949, LL.B. 1956, The George Washington University	
Garrett, William Donaldson	D.C.
B.S. 1953, The George Washington University	
Garrison, Anne Elizabeth	D.C.
A.B. 1947, Oklahoma College for Women	
A.M. in Ed. 1955, The George Washington University	
Garrison, Lynn Willard	Md.
Garrison, Mildred Louise	D.C.
Garrison, Sharon	Va.
B.S. 1957, College of William and Mary	
Garro, Edward Joseph	Nev.
Gartner, Diana	D.C.
A.B. 1956, Radcliffe College	
Gartner, Walter Bertram	Va.
B.S. 1955, University of Maryland	
Gartner, Wanda Adelle	D.C.
Garver, Carl Paul	Ill.
B.S. 1937, Northwestern University	
M.I.A. 1949, Columbia University	
Garzan, Mehrdad	D.C.
Gast, Luverne Leon	Va.
B.S. in Ed. 1953, Northern State Teachers College	
Gastrich, Henry Gustav	Md.
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Gates, Albert Martin	D.C.
Gates, Edward Charles	Kans.
Gates, Francis Kenneth, Jr.	Calif.
A.B. 1956, Occidental College	
Gates, Herbert Stelwyn, Jr.	D.C.
A.B. 1954, Duke University	
Gates, Mary Margaret	D.C.
Gates, Wayne Robert	D.C.
Gatewood, Thomas Herbert, Jr.	D.C.
Gatley, Doris Marie	Va.
Gatley, James Paul	Va.
Gatlin, Marilyn Adams	Md.
A.B. 1954, University of Colorado	
Gatlin, William Hubert	Va.
B.S. 1952, Southwest Missouri State College	
Gatti, Desmond Francis	D.C.
Gaudio, Anthony Carl	N.Y.
B.S. 1952, University of Wisconsin	
Gaugier, Yvonne Cecile	Va.
Gauthier, John Thomas	Md.
B.S. 1953, Fordham University	
Gauvreau, Frederick John	Md.
Gavaghen, William Edward	D.C.
Gay, George Lawrence	Md.
Gay, Richard Arthur	Md.
Gay, Robert Derril	Ga.
Gaylor, Ardis Ann	Iowa
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B.S. in E.E. 1956, Massachusetts Institute of Technology	
Gechman, Marvin Carlton	Minn.
Geduld, Martin Seymour	D.C.
Geer, Helen Fern	D.C.
Geerken, John Henry	D.C.
Gefrieh, Viola S.	Md.
A.B. 1927, University of North Carolina	
Gehri, Donald John	Va.
B.S. 1952, University of Maryland	
Gehringer, Edward Charles	D.C.
A.B. 1957, The George Washington University	
Gehringer, Thelma Ann	D.C.
Gehrke, George Dean	Md.
Geib, Claudia	Ohio
Geibel, Margaret E.	D.C.
Geiger, Ellen W.	D.C.
Geiger, Ronald August	D.C.
Geigle, Herbert	D.C.
A.B. 1953, University of South Dakota	
Geiser, Jesse Browning	Md.
Geissel, Frederic John	D.C.
Gekker, Paul	Va.
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Gelber, Stuart Harold	D.C.
Geller, Judith Foelak	Va.
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Gellman, Sally Fay	Va.
Gellnicht, Donald Leonard	Fla.
Gendelman, Francis Wolf	D.C.

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Gennerich, William Stephen N.Y.
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Genovese, Kathryn Francis Va.
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Gensler, Henry King Ohio
Gentner, Walter Andrew Md.
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Gentsch, Frank McClean, Jr. Texas
Geoghegan, William Edwin Davis, Jr. Md.
Georgatsos, Nicholas Chris D.C.
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George, Desmond Alvis Va.
B.S. 1941, Stephen F. Austin State College
George, Helen Olive Va.
George, Henry Lewis D.C.
George, James D.C.
B.S. 1930, Massachusetts Institute of Technology
George, James David D.C.
George, James Francis Md.
B.S., B.C.E. 1951, University of Illinois
George, Mary Md.
A.B. 1953, University of Maryland
George, William Mason Mich.
A.B., A.M. 1951, University of Michigan
Georgiades, Zenon Efthymiou D.C.
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Geppert, James Alan Ill.
B.S. in Ch.E. 1955, Northwestern University
Gerachis, Dee Dee Aristedes D.C.
Gerachis, Platon Leonidas Va.
B.S. 1952, University of Maryland
Gerachis, Shirley I. D.C.
Gerachis, Stephen D.C.
Geranis, Arris John Md.
Gerber, Anita Jane Va.
Gerber, Charles Trenton D.C.
Gerber, Frederic H. Md.
Gerber, Linda Ann D.C.
Gerber, Martin Va.
B.S. 1948, M.S. 1949, North Texas State College
Gerber, Robert Hanford Md.
Gering, Henry Smither Md.
B.S. 1957, The Citadel
Gerkewicz, Holly D.C.
Gerlach, Elmer Kenneth Va.
Germain, Everett Grant, Jr. Va.
B.S. in E.E. 1953, Virginia Polytechnic Institute
Gernert, Earl Clifford, Jr. Pa.
Geronimo, Jean Mary Mass.
Gerra, Martin Jerome Md.
B.S. in F.S. 1949, Georgetown University
A.M. 1954, Catholic University of America
Gerst, Robert Frederick D.C.
Gersten, Alvin Md.
B.S. 1956, College of the City of New York
Gertzberg, Tova Israel
Geschickter, Charles Freeman, Jr. Va.
A.B. 1955, Wesleyan University
Gessford, Susan Shelton Md.
Gesswein, Joseph Md.
A.B. 1951, A.M. 1953, Boston University

Getreu, John Hoeft
A.B. 1954, B.C.L. 1956, College of William and Mary
Ghatan, Djamshid Jack
A.B. 1956, Susquehanna University
Gheorghiu, Raoul
LL.B. 1932, Bucharest University
LL.D. 1951, Diploma 1952, University of Paris
Gianakos, George James
A.B. 1953, University of South Carolina
A.M. 1954, The George Washington University
Gianukakis, Peter
Gibb, Frederick William II
Gibbons, DeLamar Johnson
B.S. 1956, Utah State Agricultural College
Gibbs, Richard James
Giberson, Howard Samuel
A.B. 1931, Harvard University
Gibert, Anne Juliet
Gibson, Alma Love
B.S. 1933, Wilberforce University
A.M. 1952, New York University
Gibson, Jean Laurita
Gibson, Langdon
Gibson, Murray Washburn
B.S. 1953, Virginia Polytechnic Institute
Gibson, Nina Ford
Gibson, William Gordon
A.B. 1936, Dartmouth College
B.S., M.S. 1938, Massachusetts Institute of Technology
Gieser, Ilah Elizabeth
B.S. 1932, Battle Creek College
Giffen, Elliott Morrison
Gigliotti, Jean Helen
A.B. 1957, St. Joseph College
Gigliotti, Joseph Carl
Gignilliat, Elizabeth Leland
Gikas, Thomas
B.S. in F.S. 1947, Georgetown University
Gilbert, Richard Leon, Jr.
A.B. 1957, Arizona State University
Gilcher, Nancy Virginia
Gild, Bernard
B.B.A. 1957, University of Pittsburgh
Gildenhorn, Herbert Joseph
A.B. 1956, The George Washington University
Gildenhorn, Lenore Sophie
Giles, Catherine Barnette
Giles, Jane Claire
Gilfillan, James McCracken, Jr.
Gill, John Francis
B.S. 1951, Fordham University
Gill, Marion Sherman
B.S. 1954, Arkansas Agricultural and Mechanical College
Gill, Phill Laird
Gillam, Patricia Dee
Gillespie, Donald Edward
B.S. 1955, Virginia Military Institute
Gillespie, Roberta Ann
Gilliam, Atla B.
Gilliam, Ezra Coke
B.S. 1940, Livingstone College
B.S. 1948, Agricultural and Technical College of North Carolina
M.S. 1951, Tuskegee Institute
Gillies, Charles Kirkwood
Gilligan, James Frederick
A.B. 1954, St. Bonaventure College

Gillikin, Jack Edward Md.
A.B. 1950, Iowa State Teachers College
A.M. in Ed. 1955, The George Washington University
Gilliland, Alexis Arnaldus Ind.
B.S. 1953, Purdue University
Gillilland, John Dale D.C.
Gillilland, Kitt Earl D.C.
Gillis, David Murray Md.
B.S. 1951, Georgetown University
Gillis, Gordon Sterling D.C.
Gillum, Frederick Easton Va.
A.B. in Govt. 1956, The George Washington University
Gilmore, Donald Beckett Md.
B.S. 1955, Roosevelt University
Gilmore, James Maurice D.C.
Gilmore, James Robson Va.
B.B.A. 1950, University of Georgia
Gilmore, Nancy Carey Va.
B.S. 1942, Southern University and Agricultural and Mechanical College
Gilson, John Aloysius, Jr. Md.
Gilstrap, Lewey Oliver, Jr. Va.
B.S. 1950, University of Oklahoma
Ginberg, Janet Beth D.C.
Gingery, C. Arden Calif.
A.B. 1928, University of California at Los Angeles
LL.B. 1931, University of Southern California
LL.M. 1953, Georgetown University
Ginn, Jerry Lee Va.
Ginn, John Allen Md.
B.S. 1953, University of Maryland
Ginsburg, Martin Alan Va.
A.B. 1955, Lehigh University
Ginsburg, Ronald Armand D.C.
Ginsburg, Virginia Helene N.J.
A.B. 1956, Antioch College
Ginter, Earl Edgar D.C.
Ginter, Roll Duff Kans.
B.S. 1948, University of Kansas
Gioia, Vincent Gerard Va.
Met. Eng. 1956, Colorado School of Mines
Giordano, Anne Marie D.C.
A.B. 1953, LeMoyne College
Giordano, Frank Michael Va.
Giovannini, Andrew Manuel Calif.
A.B. 1957, University of California
Girton, Gloria D.C.
Giser, Harold Walter Calif.
Giss, Beverlie Anne D.C.
Gittleman, Louis D.C.
B.S. in B.A. 1954, Lebanon Valley College
Giuffrida, Robert Thomas N.Y.
A.B. 1949, A.M. 1950, University of Rochester
Giuliano, Rose Carmella D.C.
Gjelsteen, Ruth Ann Mich.
A.B. 1956, Smith College
Glabere, Richard Robert N.Y.
B.S. 1955, St. John's University
Gladden, James Wilson, Jr. Va.
Gladden, William Va.
A.B. 1957, Howard University
Gladis, Joseph Va.
Glasener, Philip J. D.C.
Glaser, Darrow Md.
A.B. 1957, University of Maryland
Glaser, Dorothy Ada D.C.
B.S. 1944, University of Wisconsin

Glaser, Michael Lance D.C.
Glasgow, Roger DeCourey N.Y.
Glass, Eileen Frances Va.
Glass, Joan Hope Pa.
Glass, Robert John Md.
B.S. in M.E. 1952, Yale University
Glassburn, Constance Ann Canal Zone
Glassman, Leonard Herbert D.C.
B.S. 1955, Franklin and Marshall College
Glassmann, Marvin N.Y.
A.B. 1957, Brooklyn College
Glatch, Louis Frank, Jr. Oreg.
A.B. 1956, Reed College
Glauberman, Sybil Va.
A.B. 1956, Queens College
Glazer, Robert Lewis N.J.
Gleason, Bonnie Lee Okla.
Gleason, Francis Joseph D.C.
Gleason, Howard Willard McIntyre Mass.
Gleason, Mary Jacqueline D.C.
A.B. 1947, Trinity College
A.M. 1951, Catholic University of America
Gleason, Michael John Md.
A.B. 1950, Ohio State University
Gleeson, Harry Hunt Md.
Glen, George Eccles Va.
Glenn, Carolyn Constance D.C.
B.S. 1952, Allen University
Glenn, Dorothy May Va.
Glenn, Gene Wallace Iowa
A.B. 1950, State University of Iowa
Glenn, Janet Ann D.C.
Glickert, Peter D.C.
B.S. in Ed. 1949, Fordham University
Glikson, Pearl D.C.
Glotzbach, William Gaylord Va.
Glover, William Thomas D.C.
Gnodde, Dorothy Carter Va.
A.B. in L.S. 1929, University of Michigan
Gnotta, Angela Fern D.C.
Gobetz, Harvey N.Y.
A.B. 1955, Harpur College
Gochenour, Richard Donald Va.
Goekel, Min Tjoe West Germany
A.M. 1950, Northwestern University
Godbersen, Amanda Pauline Md.
Godwin, William Holloway N.C.
Goebel, Joan Mae Va.
Goetz, Edwin Engle Md.
Goetz, George Edward Va.
A.B. 1952, Long Island University
A.M. in Govt. 1957, The George Washington University
Goetz, Ray Porter Md.
Goff, Charles Clifford Va.
A.B. 1950, West Virginia University
Goksel, Emel Turkey
Goksel, Burhan Turkey
Golab, Thomas John D.C.
Gold, Benjamin Arthur D.C.
Gold, Harold K. Md.
Gold, Joy Rochelle Md.
Gold, Lewis Md.
Gold, Sam Snyder Va.
A.B. 1950, Emory University
Goldberg, Aaron N.Y.
A.B. 1939, Brooklyn College
M.S. 1954, De Paul University
Goldberg, Benjamin Md.
B.S. 1936, College of the City of New York
Goldberg, Bernard D.C.

Goldberg, David Michael D.C.
Goldberg, Helen Louise Md.
Goldberg, Jayrel N. Fla.
Goldberg, Ronald Sanford D.C.
  B.S. 1955, University of Maryland
Goldenberg, Jerome Albert Md.
Goldenberg, Marvin Arthur Md.
  A.B. 1951, B.S. in E.E. 1952, Pennsylvania State University
Goldin, Evelyn Ann D.C.
Golding, Harold Frederick, Jr. Md.
  B.S. in B.A. 1951, University of Richmond
  LL.B. 1956, The George Washington University
Goldman, Eva Md.
Goldman, Robert Joshua Herzl Md.
Goldner, Irving Abraham Conn.
  A.B. 1940, Yale University
Goldschmidt, Joel Lewis N.Y.
  B.S. 1956, University of Massachusetts
Goldsmith, Betty Ellen D.C.
Goldsmith, George Kay Md.
  B.S. 1954, D. C. Teachers College
  A.M. in Ed. 1957, The George Washington University
Goldsmith, Sandra Glaser Md.
  B.S. 1956, D. C. Teachers College
Goldstein, Alan Jason D.C.
Goldstein, Barbara Vivian D.C.
Goldstein, Bernard Irvin D.C.
Goldstein, Elliot Robert D.C.
Goldstein, Frances Zelda Md.
Goldstein, Sherwood Va.
  B.M.E. 1956, College of the City of New York
Goldstein, Stanley Md.
Goldstein, Stanley Marvin D.C.
Gole, Millicent Kay D.C.
Golis, Joseph Francis Va.
Goll, Christian John Va.
  B.B.S. 1941, Rutgers University
Golub, Arlene Schlein Md.
Golze, Alfred Rudolf Md.
  B.S. in C.E. 1930, C.E. 1940, University of Pennsylvania
Gomberg, Carolyn Adrien Va.
Gomez, Stella Va.
Gomez-Acosta, Hector Anacleto Colombia
Gondos, Bernard Va.
  B.S. 1956, Yale University
Gonzales, Gerald Anthony D.C.
Gonzales, Marina Yolanda Peru
Gonzalez, Abraham Murray Peru
Gonzalez, Eugene Robert D.C.
  A.B. 1952, Yale University
Gonzalez, Pedro Adolfo D.C.
  B.S. 1951, The Citadel
Gooch, Ralph Emery Va.
Good, Betty Ann Va.
  A.B. 1954, University of Florida
Good, Dean Kemple Pa.
  A.B. (C.G.S.) 1957, The George Washington University
Good, Edgar Clifton Va.
Good, George Morton Fla.
  A.B. 1951, Emory University
Good, Henrietta Elizabeth Va.
Goodall, David Lee Va.
Goodchild, Robert Marsden Va.
  A.B. 1948, Rutgers University
Goode, Martha Ann Va.
Goodell, Thomas Wallace D.C.

Gooden, Julius Hand
  B.S. 1946, Georgia State College
  M.S. 1947, University of Minnesota
  Ph.D. 1951, Ohio State University
Goodman, Barbara Ann
Goodman, Julius Morton
Goodman, Lorraine Fay
Goodman, Philip
  B.S. 1956, Union College
Goodman, Robert Stanley
  B.S. 1956, The George Washington University
Goodman, Trudith Joyce
Goodnight, James Arvel
Goodrich, Bernard Arthur
Goodsell, Neil Wylie
  A.B. 1955, The George Washington University
Goodson, Richard Carlyle
Goodwin, Patricia Schmadel
  A.B. 1956, Seton Hill College
Goodwin, Ray Cunningham
Goody, Percy Edward
  A.B. 1954, University of Maryland
Gookin, Mary Elizabeth
  A.B. 1943, Emmanuel College
Goolsby, Don Carlos
Goolsby, Joyce Bryan
Goranson, Rolf Fabian
  B.S. in A.E. 1940, University of Washington
Gordon, Alexander Rola
Gordon, Arlene Lane
Gordon, Bartley Brooks
Gordon, Charles Chambers
  B.S. 1942, Southwestern University
Gordon, Clifford Mark
  B.S. 1952, Bates College
  A.M. 1954, Wesleyan University
Gordon, David High
  A.B. 1954 University of Virginia
Gordon, Elmo Addison
Gordon, George Barnett
Gordon, Harold
Gordon, Harry Carl
  B.S. 1957, The George Washington University
Gordon, Harvey Jack
  B.B.A. 1952, College of the City of New York
  M.P.A. 1956, Harvard University
Gordon, Hugh Lee
  B.S. in E.E. 1952, University of Maryland
Gordon, Ina Carole
Gordon, Lawrence Crampton
  B.S. 1949, U. S. Merchant Marine Academy
Gordon, Leonard
Gordon, Marvin F.
  A.B. 1942, College of the City of New York
  A.M. 1954, Columbia University
Gordon, Marvin Norman
Gordon, Milton
  A.B. 1950, University of California at Los Angeles
  M.S. 1955, The George Washington University
Gordon, Ronald Stuart
Gordon, Stewart Lynell
  A.B. 1953, A.M. 1954, University of Kansas
Gordon, William Bernard

Gore, Robert Wayne Va.
Goren, Arthur Eugene Md.
Gorman, Thomas Francis Md.
Gormley, Mary Catherine Va.
Gormley, William Paul Calif.
A.B. 1949, San Jose State College
A.M. 1951, University of Southern California
Ph. D. 1952, University of Denver
LL.B. 1957, The George Washington University
Goshorn, Elmer Ellsworth Ill.
B.S. in M.E. 1955, Northwestern University
Goslee, Eugene George Minn.
A.B. 1949, A.M. 1953, American International College
Gosnell, Arthur Lewis Md.
Gosorn, Mary Lou Va.
Gospodinoff, Gospodin Todor D.C.
Goss, Melvin Lee Va.
B.S. in E.E. 1950, Purdue University
Goto, John Masao Va.
Gott, Charles Morris D.C.
Gouaze, Edmond Constantin La.
B.S. 1956, University of Maryland
Gough, Janet Joyce Md.
Gough, William Cabot N.J.
B.S.E. 1952, M.S.E. 1955, Princeton University
Gould, Shirley D.C.
Gould, Stuart Allan N.J.
Govedaros, Constantine Xenophon Md.
Gowell, Richard Lewis D.C.
Gowers, Robert Franklin D.C.
B.S. 1954, Pennsylvania State University
Goze, Pierre Eugene Leon D.C.
Grabowski, Alice June D.C.
Gracias, Denis Frank India
Grady, Florence Margaret D.C.
B.S. 1939, Marywood College
A.M. 1946, University of Georgia
Gragan, Philip Arthur D.C.
A.B. 1953, The George Washington University
Graham, Charles Okke Iowa
A.B. 1955, Texas Christian University
Graham, Geraldine Agnes D.C.
Graham, John Calvin Md.
B.S. 1953, Pennsylvania State University
Graham, John Goodwin Va.
B.E.E. 1957, University of Virginia
Graham, Ronald Milton Wash.
Graham, Scott L. Okla.
Gramlich, Michael Joseph II Va.
Grandy, Patricia Anne D.C.
A.B. 1957, The George Washington University
Granger, Lynne Va.
Granger, Stephen Ireland Md.
A.B. 1952, Amherst College
Graniewski, Eugene Bernard Nebr.
B.S. 1957, University of Omaha
Grant, Albert Abraham Md.
B.C.E. 1948, Catholic University of America
Grant, Blaine Dodds D.C.
Grant, Dorothy Sneed D.C.
B.S. 1933, D. C. Teachers College
Grant, Grace D.C.
A.B. 1940, Marshall College
Grant, Natalie Calif.

Grant, Reina Alice Md.
A.B. 1956, The George Washington University
Grant, Roger Williams, Jr. Va.
A.B. 1934, University of Richmond
M.S. 1935, College of William and Mary
Grant, Walter William Va
A.B. 1951, Pennsylvania Military College
Grant, William Arthur N.Y.
B.S. 1948, University of Pennsylvania
A.M. 1949, Columbia University
Graps, Alexander, Jr. Va.
Grasso, Michael D.C.
B.S. 1946, Bucknell University
Gratsias, Stylianos John D.C.
Gratz, George Otto Va.
B.S. 1957, University of Missouri
Grautoff, Walter Bernard Md.
B.S. in M.E. and A.E. 1932, New York University
Graves, Betty Jane Va.
Graves, Donald William Va.
B.C.E. 1957, Cornell University
Graves, John Lee Okla.
Graves, Martha Angeline Ala.
Graves, Walter Albert Md.
A.B. 1941, A.M. 1942, Syracuse University
Gravitte, Dwight Lee Va.
A.B. 1948, B.S. 1954, The George Washington University
Gray, Charles Helman Va.
B.S. 1943, M.D. 1947, Stanford University
Gray, Chester Harold D.C.
Gray, Damon Charles Md.
Gray, D'Wayne Texas
A.B. 1952, University of Texas
Gray, Gerald Andrew Md.
Gray, Gerald Cady Calif.
A.B. 1955, University of California
Gray, James Vernon Pa.
Gray, John Alexander D.C.
A.B. 1951, Dartmouth College
LL.B. 1954, The George Washington University
Gray, John Thomas N.M.
B.S. 1955, U. S. Naval Academy
Gray, John Thompson, Jr. Va.
Gray, Joyce Marie D.C.
A.B. 1957, The George Washington University
Gray, Ralph Richard Utah
A.B. 1955, University of Utah
Gray, Rex Cameron W.Va.
A.B. 1933, Salem College
A.M. 1941, West Virginia University
Gray, Robert Alan, Jr. Va.
A.B. in Ed. 1956, The George Washington University
Gray, Rose A. F. Liberia
A.B. 1950, University of Liberia, Liberia
Gray, William Ralph Pa.
Gray, William S. Md.
B.S. 1942, Maryland State Teachers College, Bowie
B.S. 1947, Morgan State College
A.M. 1951, New York University
Grayson, Benson Lee N.Y.
A.B., A.M. 1953, New York University
Grayson, Nancy Louise D.C.
Grayson, Saranelle D.C.

Greaney, Patricia Diane Calif.
B.S. 1956, University of California at Los Angeles
Grear, Lena Eloise Md.
A.B. in Ed. 1957, The George Washington University
Green, Arlene Joan D.C.
Green, Arthur William Md.
Green, Dorothy Imogene D.C.
B.S. 1942, Philander P. Smith College
Green, Drury Hamilton Ill.
Green, Edward Harrison Md.
B.S. in P.E. 1951, A.M. in Ed. 1953, The George Washington University
Green, Eloise Cochran D.C.
Green, Gerald Va.
Green, Howard Robert Va.
B.M.E. 1956, College of the City of New York
Green, James Henry N.Y.
A.B. 1939, Amherst College
Green, James Jackson Md.
Green, James Laffeter N.J.
B.S. 1928, U. S. Military Academy
B.S. in C.E. 1932, University of California
Green, Laurence Burton Va.
B.S. 1941, U. S. Naval Academy
Green, Marion Ethel Va.
Green, Nathaniel Norburg D.C.
Green, Norman Morgan Va.
Green, Opal Jeffries Md.
B.S. 1941, Southeast Missouri State College
Green, Paul Douglas Va.
B.S. 1951, University of Illinois
Green, Robert Patrick Md.
Green, William Clark Va.
Greenberg, Daniel Sheldon D.C.
A.B. 1953, Columbia University
Greenberg, Gloria Md.
A.B. 1957, Brooklyn College
Greene, Clifford Marcellus N.J.
B.S. 1951, Temple University
Greene, Evelyn Foster D.C.
B.S. 1936, D. C. Teachers College
A.M. 1947, Columbia University
Greene, Frances Bland Va.
Greene, Frank Wesley, Jr. D.C.
Greene, James Whitehead Va.
Greene, Katherine Virginia Va.
A.B. 1947, Eastern Nazarene College
A.M. 1948, Ph.D. 1954, The George Washington University
Greene, Leonard Lee Va.
Greene, Mary Catherine D.C.
Greene, Roosevelt Browne D.C.
Greene, Stuart Thornton Va.
Greenfield, Julius William N.Y.
A.B. 1957, The George Washington University
Greenfield, Russell Roger S.D.
A.B. 1957, Augustana College
Greenhouse, Samuel W. Md.
B.S. 1938, College of the City of New York
A.M. 1954, The George Washington University
Greenlee, Jacquelyn Peters Va.
Greenshields, Marsha Lea Va.
Greenslade, John Francis D.C.
B.S. 1926, U. S. Naval Academy

Greenstein, Maurice William
B.S. 1948, Providence College
M.S. 1950, Brown University
Greenstein, Robert Edward
Greenwald, Joseph Adolph
A.B. 1941, University of Chicago
LL.B. 1951, Georgetown University
Greenway, Sidney Alfred
Greenwell, Robert G.
Greenwood, James Thomas
B.S. 1954, Pennsylvania State University
Greenwood, Joseph Richard
Greer, Harry Holt, Jr.
B.S. 1934, U. S. Naval Academy
A.M. 1954, The George Washington University
Greer, Laura Ann
B.S. in B.A. 1957, West Virginia University
Greever, William Randolph
B.S. in Ed. 1954, A.B. 1955, Morris Harvey College
Greger, Gwendolyn Friese
Gregerson, Richard Overlie
B.S. 1957, Augustana College
Gregorian, Siran
A.B. 1950, Hunter College
A.M. 1951, Middlebury College
Gregorian, Sirvart
Gregory, Bethania
Gregory, Frank Arthur
Greinke, Everett Donald
B.S. 1951, M.S. 1956, Northern Illinois State Teachers College
Greiner, Richard William
Gresham, Edward Russell
Gresham, James Reginald
Gresinger, Thomas Hamlin
A.B. 1957, Williams College
Gretter, Harrison J.
B.Arch. 1952, Howard University
Grieco, Francisco de Assis
Griesemer, Jeremiah Devel
A.B. 1943, University of North Carolina
LL.B. 1954, National University
Griest, Alan Brooke
Grieves, Robert Gordon
Griffel, Eric Michael
A.B. 1956, University of California at Los Angeles
Griffeth, Gary Glen
Griffin, Alfred Charles
B.S. 1952, U. S. Military Academy
Griffin, Benjamin Franklin
B.E.E. 1951, University of Virginia
Griffin, Charles Narey, Jr.
Griffin, David Wayne
A.B. 1956, Catawba College
Griffin, Ellen
Griffin, Lindon Larkin
B.E.E. 1954, The George Washington University
Griffin, Robert Julian
Griffin, Thomas Francis
B.S. 1951, Boston College
Griffith, Anne Page
Griffith, Charles Russell
Griffith, Dan Moseley
Griffith, Elisabeth Bowen
Griffith, Florence Patricia
Griffith, Sara Fair
Griffiths, Harriet Eleanor

Grigis, Alfred Lawrence N.J.
A.B. 1940, A.M. 1941, Rutgers University
Grigorian, Haikaz Martiros Iran
A.B. 1952, Boston University
M.S. in P.H. 1953, Columbia University
Grim, Joseph Mattison D.C.
Grimal, Annie Marguerite D.C.
Grimal, Brigitte Marie D.C.
Grimes, George Alex D.C.
Grimes, Harry Coleman, Jr. Ohio
A.B. 1952, University of Cincinnati
Grimes, Nada Lowry Va.
Grimley, John Joseph Md.
B.S. 1950, Fordham University
Grimmer, Raymond Malcolm D.C.
B.S. 1954, Medical College of Virginia
Grindle, George, Jr. Md.
Griner, Janet Virnelson Va.
Grinnell, Ira Homer S.D.
A.B. 1956, University of South Dakota
Grinnell, John Robert Va.
B.S. in P.E. 1950, A.M. in Ed. 1951, The George Washington University
Gripp, Richard Carl Va.
A.B. 1948, Whittier College
A.M. 1949, Ph.D. 1954, University of Southern California
Grisamore, Betty Martin Md.
Griswold, Lyman William Md.
B.S. in E.E. 1955, Duke University
Groening, Ralph Edward Md.
A.B. in Govt. 1949, The George Washington University
Groesbeck, William Anton Md.
B.A.E. 1950, University of Minnesota
Groettum, Theodore Roger Md.
Groff, Charles LeRoy, Jr. Va.
Grogan, Kathleen Mary D.C.
A.B. 1957, Trinity College
Groner, Alfred Marcel D.C.
A.B. 1951, Rice Institute
A.M. 1953, Johns Hopkins University
Grosman, Alan M. D.C.
A.B. 1956, Wesleyan University
A.M. 1957, Yale University
Gross, Beverly Bernice Md.
Gross, Edwin Neil N.J.
Gross, Herbert Samuel D.C.
Gross, Howard Rabun Va.
A.B. 1953, University of Washington
Gross, Jacqueline Rodbell D.C.
B.S. 1956, D. C. Teachers College
Gross, James Dehnert Ill.
B.S. 1951, University of Chattanooga
M.D. 1955, Vanderbilt University
Gross, Karen Mae Md.
Gross, Kurt Frederick Wis.
A.B. 1953, University of Wisconsin
Gross, Marc Stuart N.Y.
B.S. in Ch.E. 1955, Massachusetts Institute of Technology
Gross, Margaret Richards Va.
A.B. 1929, Florida State University
Gross, Philip Arnold Md.
Gross, Robert Thomas N.Y.
Gross, Robert Victor D.C.
A.B. 1949, University of Tampa
A.M. 1953, The George Washington University
Grossman, Harold A. N.Y.
A.B. 1946, M.B.A. 1956, College of the City of New York
Grossman, Joseph N.J.
Grossman, Phillip Va.
B.S. 1953, New York University
Grossman, Phyllis D.C.
Grossman, Ronald Allen D.C.
Grossnickle, Betty Depp N.C.
A.B. 1952, Duke University
Grossnickle, William Foster N.C.
A.B. 1951, Duke University
Grotlisch, Louise Kathryn D.C.
A.B. 1939, Duke University
Grounds, Marilyn Lee N.Y.
Grover, Charles G. Md.
Grover, Helen Larson Md.
Groves, Norman Scott W.Va.
Groves, Roderick Michael D.C.
Grubbs, Joan Elizabeth Va.
Gruen, Kitty Ann Va.
Grundon, William Gene D.C.
A.B. 1956, San Diego State College
Grunwell, Jane Elizabeth D.C.
Gruver, Elaine Hendricks Va.
A.B. 1956, Mary Washington College
Gruver, Richard Ralph Va.
Gruver, William John Md.
B.S. 1939, Pennsylvania State University
A.M. in Ed. 1951, The George Washington University
Guandolo, Vincent Livingston Md.
A.B. 1953, Kenyon College
Guarilia, Eugene Michael Pa.
Gubser, Dorothy M. Va.
A.B. 1956, American University
Gude, Gilbert Md.
B.S. 1948, Cornell University
Gudim-Levkovich, Marian D.C.
A.B. 1957, The George Washington University
Gudis, Michael Laurence Va.
Guerin, Thomas E. Ill.
Guerra, Serafinn Lawrence D.C.
B.S. 1952, The George Washington University
Guerrieri, Harry Joseph, Jr. Pa.
A.B. 1952, St. Vincent College
Guerrini, Sylvester Joseph Pa.
B.S. 1956, Carnegie Institute of Technology
Guest, Lillian Pa.
Guggenheim, Marjorie Gibson Ill.
A.B. 1954, The George Washington University
Guida, Carmela Alice D.C.
Guidace, Vincent Carmelo Conn.
A.B. 1954, St. Mary's College
Guidera, Thomas F. Va.
B.S. 1956, University of Maryland
Guiler, Debbie Ruth Fla.
Guiliano, Bernardo Joseph D.C.
Guinard, Norman William Va.
B.S. 1951, Boston College
Guiod, Grace Kathleen Mass.
Guiton, Carl Richard N.J.
A.B. 1957, Columbia University
Gulbrandson, Helen Reid D.C.
A.B. in Ed. 1938, A.M. 1952, The George Washington University
Gulhati, Shashi Kiran India
Gulhati, Vijaya Lakshmi India
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B.S. 1950, Birmingham-Southern College
A.M. 1956, Vanderbilt University
Guner, Siddik, Turkey
B.S. 1937, Gazi Teacher Training College, Turkey

Gunod, Seymour David Va.
  A.B. in Govt. 1949, The George Washington University
Gunther, Ronald Edgar N.J.
Gurin, Jacob Md.
  B.S. in Ed. 1941, College of the City of New York
Guss, James Shelby Va.
  A.B. 1948, Virginia Union University
Guss, Lavinia Viola Va.
  A.B. 1947, Virginia Union University
Gussin, Patricia Elizabeth Mo.
Gustafson, Charlotte Matilda D.C.
Gustin, Louise Jeanette D.C.
Guter, Joseph Gibson Va.
  A.B. 1953, St. Vincent College
Guthery, Upton Keller D.C.
  A.B. in Govt. 1952, The George Washington University
Guthrie, Donna Marie Va.
Guthrie, Louis Thomas Pa.
  A.B. 1951, M.S. 1952, Pennsylvania State University
Gutierrez, Ernest B. D.C.
Gutierrez, Joseph Edward D.C.
  A.B. 1956, Georgetown University
Gutierrez, Rafael A. Md.
Gutierrez, Rosemary T. D.C.
  A.B. 1946, Hunter College
Gutmann, Richard Waldorf Md.
Guttmacher, Richard M. D.C.
Guttman, Robert Michael D.C.
  A.B. 1952, Harvard University
Guttman, Susan Elizabeth D.C.
  A.B. 1950, Radcliffe College
Guttmann, Judith Barbara D.C.
Guttmann, Ronald Benjamin D.C.
Guy, Donald Martin Md.
Guy, Philip Allen Va.
  A.B. 1953, Gettysburg College
Guy, William Henry Md.
  A.B. 1947, Northeastern University
  A.M. 1948, Boston University
Guymon, Roy Ill.
Guzick, Lawrence C. Md.
  B.S. in M.E. 1949, Oklahoma Agricultural and Mechanical College
Gwathmey, Jeanne Overton D.C.
Gwiazdowski, Joseph John Md.
  B.S. 1951, Worcester Polytechnic Institute
Gwinn, Byron Charles II Va.
  A.B. 1955, Duke University
Gwinn, Jean Ellen Conn.
  A.B. 1957, Duke University
Gygax, John Derek Va.
Gyi, Shirley Md.

H

Haack, Louise Bender Va.
  A.B. 1946, The George Washington University
Haase, Herta Va.
  A.B. 1931, Heligenstadt Convent, Germany
Hacker, Richard Bruce Md.
  B.S. 1949, Pennsylvania State Teachers College, Millersville
Hackl, Sister Mary Mechthild D.C.
Haddad, Barbara Jean N.Y.
  B.S. 1955, University of Miami
Haddad, John Khouri N.Y.
  A.B. 1953, Cornell University
  M.S. 1955, University of North Carolina
Haddad, Richard Michael Mich.
  A.B. 1955, Wayne State University
Haddix, Earl Blaine W.Va.
  B.S. 1950, West Virginia University
Hader, Donald Fla.
  B.S. 1955, University of Florida
Hadley, Frank D.C.
  A.B. 1949, New York University
Hadley, Marian L. Md.
  A.B. 1944, Earlham College
  Ed. M. 1954, Marquette University
Haefs, Richard Alan D.C.
Haeuser, William Henry, Jr. La.
  B.B.A. 1934, Tulane University
Haffty, Joseph D.C.
  B.S. 1950, University of Massachusetts
  A.B. 1956, American University
Haft, Stanley Herbert D.C.
Hagan, Peter James, Jr. Va.
  A.B. 1949, St. Francis College
Hagauer, Richard William Va.
Hagen, Gordon Holte Minn.
  A.B. 1957, St. Olaf College
Hagen, Harold Melton Minn.
  A.B. 1956, St. Olaf College
Hagen, Helen Margaret D.C.
Hagen, John Holte Minn.
  A.B. 1956, St. Olaf College
Hager, Joseph William, Jr. W.Va.
  B.S. in B.A. 1956, West Virginia University
Hagerling, Ruth Eleanor Va.
  A.B. 1940, Nebraska Wesleyan University
Hagert, Thornton Va.
Hagerty, William Joseph Mass.
  A.B. 1951, Boston College
Haggart, Ronald D. D.C.
  A.B. 1956, The George Washington University
Hagley, Ray Russell W.Va.
Hahn, George Christian N.J.
Hahn, Odessa Milford Md.
  A.B. 1927, Randolph-Macon Woman's College
Hahn, Robert Henry Md.
  A.B. 1950, Johns Hopkins University
Hahn, Rosemarie Elizabeth Md.
Hahn, William Robert, Jr. Va.
Hahn, Young O. K. Korea
  B.S. 1950, Ewha Women's University, Korea
Hain, David Dieter N.Y.
  B.S., A.B. 1955, Brooklyn College
Hairston, Juanita C. D.C.
  A.B. 1943, Shaw University
Haislip, Miriam Knight Md.
Haithcock, Maynard Kitchin N.C.
  B.S. in P.E. 1949, A.M. in Ed. 1953, The George Washington University
Hale, Ervin Kent Mont.
Hales, Alfred Ross, Jr. Va.
  B.Arch.Eng. 1951, Catholic University of America
Haley, Richard Francis Mass.
  B.S. 1934, Northeastern University
Haley, Violet Lowry Va.
  LL.B. 1933, National University
Halfpap, Phylis Elaine Md.
Hall, Audrey Doney Va.
Hall, Bertha Jean D.C.
Hall, Blair Parks Md.
  A.B. 1952, University of Maryland
Hall, Brian Lionel Nev.
  A.B. 1957, University of Nevada

Hall, Carolyn Pryde Va.
Hall, Charles Llewellyn Md.
A.B. in Govt. 1955, The George Washington University
Hall, Charles Stanley Md.
A.B. 1930, McKendree College
LL.B. 1953, Wayne University
Hall, David Alen Va.
Hall, David Wayne Ariz.
Hall, Dewey Eugene Ind.
B.S. 1954, Ball State College
Hall, Dorothy Atkinson Md.
B.S. 1941, Appalachian State Teachers College
Hall, Edward D.C.
Hall, Frances Labelle D.C.
A.B. 1938, University of Missouri
Hall, George John Md.
B.E. 1937, Catholic University of America
Hall, Harriet Ellen Minn.
Hall, Jack Herbert Va.
B.Ch.E. 1957, Rensselaer Polytechnic Institute
Hall, James Murdock D.C.
B.B.A. 1954, Wake Forest College
Hall, John King Va.
Hall, John Randolph III Va.
Hall, Joseph Clifton Md.
Hall, Joseph Samuel Md.
Hall, Lawrence Joseph Md.
Hall, Lorne Franklyn Conn.
A.B. 1956, Duke University
Hall, Mary Elizabeth Va.
Hall, Orrington Robinson D.C.
Hall, Sandra Eleanor Tenn.
Hall, Stanley Rylon Va.
Hall, Sylvester Raymond D.C.
A.B. 1933, A.M. 1936, Howard University
Hall, Thearthur Pa.
Hall, Walter Randal Va.
A.B. 1940, Brown University
Hallberg, Frederick Carl Md.
Haller, Allan Richard Md.
Halliday, M. Ruth Va.
B.S. in Ed. 1942, Radford College
Hallman, William Hughes Texas
A.B. 1953, University of Texas
Halow, Joseph Md.
Halow, Mary Md.
A.B. 1956, The George Washington University
Halpert, Nathan Jabotinsky D.C.
Halsey, Davis N.H.
Halstead, Glenn Altman Va.
B.S. in B.A. 1950, University of Arkansas
Halter, William Charles, Jr. N.Y.
Halvorsen, Ronald Moyer Va.
B.S. in C.E. 1957, Drexel Institute of Technology
Haly, Thomas Hagood Pa.
Ham, Bertram Grantham Va.
A.B. 1951, University of Southern California
Hamblen, H. Collins Md.
Hamblen, Johnson Fred Tenn.
B.S. 1947, LL.B. 1949, University of Tennessee
Hambleton, Neal Del.
A.B. 1956, University of Delaware
Hambright, Harold Theodore, Jr. Md.
Hamby, Zetta Barker Va.

Hamer, Helen Breglie D.C.
B.S. 1935, New York University
Hamill, James John D.C.
B.M.E. 1957, Georgia Institute of Technology
Hamill, Myrna Joy D.C.
Hamilton, Alexander Moore, Jr. Oreg.
Hamilton, Barbara Allen D.C.
A.B. 1954, Howard University
Hamilton, Clyde Henry, Jr. S.C.
B.S. 1956, Wofford College
Hamilton, Dale Leslie D.C.
Hamilton, Frank Joseph D.C.
A.B. 1954, Loras College
Hamilton, Harry Augustus Md.
B.M.E. 1947, University of Louisville
Hamilton, Henry Betts D.C.
Hamilton, Janace Ann Okla.
Hamilton, Michael Amin Md.
Mus.B. 1955, University of Rochester
Hamilton, Patrick Joseph D.C.
Hamilton, Philip Collier Conn.
B.S. 1956, State University of New York
Hamler, Dollie Rubye Iowa
A.B. 1949, A.M. in Govt. 1957, The George Washington University
Hamm, Charles Sherman N.Y.
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Hamm, Julie Fairman D.C.
Hammack, Gloria Mae D.C.
Hammel, Claire Louise Md.
Hammock, Barney Cleveland Va.
B.S. in B.A. 1947, Ohio State University
Hammond, Claudia Carter D.C.
A.B. 1939, Allen University
Hammond, Harlan Young Va.
A.B. 1949, University of Utah
Hammond, Render Paul Va.
B.S. 1956, University of Richmond
Hamon, Beverly Jean Va.
B.S. in Eng. 1953, The George Washington University
Hamon, William Joseph Va.
B.M.E. 1953, The George Washington University
Hampshire, Alan Curtis R.I.
A.B. 1953, Amherst College
Hampton, Clyde Vernon, Jr. Va.
Hampton, Elbert Wolfe D.C.
B.S. 1954, Lincoln Memorial University
A.M. 1955, George Peabody College for Teachers
Hampton, Richard Thomas Md.
Han, Hsiao-Chung Formosa
A.B. 1954, Taiwan University, Formosa
Han, Jae Yeol Korea
Hanagan, Peter Paul N.M.
B.S.S. 1954, Georgetown University
Hanawalt, I. Dwight Pa.
Hancock, Frances Ellen Va.
Hancock, Nell Tenn.
Hand, William Lawrence Va.
Handleman, Marshall Jeffry Fla.
Handler, Richard Va.
B.S. in C.E. 1951, University of Maryland
Handley, Earl Leslie Va.
A.B. 1955, University of Colorado
Hanen, Eileen Va.
B.M.E. 1951, University of Indiana
Hanes, Richard Wayman Va.
B.S. in E.E. 1953, Purdue University

Haney, Earle, Jr. Va.
A.B. in Govt. 1955, The George Washington University
Haney, Jayne Dorothy Va.
Haney, Joe David D.C.
Haney, Roger Kenneth D.C.
Hanifah, Elsam Abu D.C.
Hanish, Sam D.C.
A.B. 1939, B.S. 1947, College of the City of New York
M.S. 1951, Columbia University
Hankerd, Marian Therese Mich.
B.S. in Bus.Ed. 1937, Nazareth College
Hanlon, James Peter Va.
Hann, William Donald D.C.
B.S. 1952, D. C. Teachers College
M.S. 1956, The George Washington University
Hanna, Caroline Valentine Md.
A.B. 1952, Franklin College
Hanna, Robert James, Jr. Md.
Hannold, Thomas Ievers Va.
Hansel, Virginia Lee Va.
B.S. in Ed. 1953, Longwood College
Hansen, Henry N.Y.
B.S. in M.E. 1951, Drexel Institute of Technology
Hansen, Jane Wood D.C.
Hansen, Melvin Robert Nebr.
B.E.E. 1957, The George Washington University
Hanson, Eric James Md.
B.F.A. 1955, Pratt Institute
Hanson, James Edward Md.
A.B. 1949, Cornell University
A.M. 1951, Harvard University
Hanson, Richard Frank Md.
Hanson, Robert Harold Va.
Hanson, Warren Durward D.C.
B.S. 1947, University of Minnesota
M.S. 1948, Ph.D. 1950, Purdue University
Hanyok, Andrew Md.
Hanyok, Joseph Md.
Hanzl, Rebecca Jane N.J.
Haramy, James Shera Ind.
A.B. 1954, DePauw University
Harb, David Hareb Va.
Harb, Wallace Sylvester Ark.
Harboe, Herbert Thomas Va.
B.S. 1937, University of Wyoming
Harbour, Stuart Lee Va.
B.S. 1947, University of Illinois
Harde, Charles Francis Conn.
Harden, Constance Elizabeth D.C.
Harden, Paul William W.Va.
Harden, Ralph Johnson D.C.
A.B. 1956, Catholic University of America
Harder, Cleta Joyce Va.
Harder, Paul Richard Va.
B.S. 1947, Rose Polytechnic Institute of Technology
Hardesty, Leila Virginia Va.
B.S. 1941, University of Maryland
A.M. in Ed. 1948, The George Washington University
Hardesty, Marion Norton, Jr. D.C.
Hardesty, Robert Louis D.C.
Hardin, Carolyn Myrick Md.
Harding, John Irving Md.
Hardison, Barbara Va.
Hardison, John Andrew Va.

Hardison, Sally Va.
Hardy, Frances Gary Va.
A.B. 1918, Randolph-Macon Woman's College
Hardy, Frank Merril Md.
A.B. 1949, New York University
M.S. in P.H. 1951, University of North Carolina
Hardy, Hubert Arthur R.I.
Hardy, Rolland Lee Va.
B.S. 1947, University of Illinois
B.S. in C.E. 1950, C.E. 1956, Missouri School of Mines
Hardy, Stanley Goodwin D.C.
A.B. 1947, New Jersey State Teachers College, Montclair
Hare, Ruby Lefler N.C.
A.B. in Ed. 1955, A.M. in Ed. 1957, The George Washington University
Harford, Jon W. Ariz.
B.S. in M.E. 1957, California Institute of Technology
Hargraves, Elizabeth Jean Va.
A.B. 1951, Fairmont State College
Hargraves, Philip Clifford Md.
Hargreaves, Robert Alan Va.
Hargrove, Dorothy Ellen D.C.
Harkleroad, Alvin Dwayne Tenn.
Harley, Marianne Elizabeth N.Y.
Harley, Patricia Va.
A.B. 1951, Smith College
Harlow, Frank Arthur D.C.
Harlow, Lester C. Ark.
B.S. 1940, John Brown University
Harman, Evelyn Clara D.C.
A.B. 1952, Rosemont College
Harman, Lowell Kay Ohio
A.B. 1957, Ohio State University
Harmon, Joseph Robert Va.
B.B.A. 1948, University of Georgia
Harmon, Julie Anne Va.
Harmon, Marcia Joan D.C.
Harms, Robert Arlyn Kans.
Harms, Stanley Frank, Jr. Md.
B.S. 1951, University of Pennsylvania
Harne, Jean Louise Md.
Harney, Gregory Newton Va.
Harney, Thomas R. N.J.
A.B. 1956, University of Vermont
Haronian, Howard Richard R.I.
B.S. 1955, University of Rhode Island
Harper, Addie Margie D.C.
B.S. 1950, D. C. Teachers College
Harper, Betty V. D.C.
Harper, Carolyn S. Va.
A.B. 1940, Syracuse University
Harper, Edith Elizabeth D.C.
A.B. in Ed. 1950, The George Washington University
Harper, Helene Margaret D.C.
Harper, Jesse Harper Va.
Harper, Marilyn Louise Wash.
Harper, Robert Selvy Mich.
Harper, William Risque Ky.
A.B. 1956, The George Washington University
Harpold, Charles Woody D.C.
Harpster, Lyndale Roberta Md.
B.S. in P.E. 1948, A.M. in Ed. 1952, The George Washington University
Harrell, Frank Perry N.C.
Harrell, Richard Lumbrick Va.
Harrigan, Thomas Joseph N.Y.

Harring, William James Md.
B.S. in Ed. 1952, New Jersey State Teachers College, Newark
A.M. in Ed. 1956, The George Washington University
Harrington, Robert Drummond, Jr. Va.
B.S. in M.E. 1952, Virginia Polytechnic Institute
Harrington, Sallie Ann Va.
Harris, Arthur Hall Va.
Harris, Carl Burton Ohio
A.B. 1956, Ohio Wesleyan University
Harris, Charles Marshall Va.
B.S. 1951, Salem College
Harris, David John Md.
A.B. 1954, William Jewell College
Harris, Dorothy Elizabeth Fla.
Harris, Frances Marian N.J.
Harris, Howard King D.C.
B.S. 1950, Hampton Institute
Harris, Howard W. Ill.
A.B. 1949, Howard University
Harris, Joanna D.C.
Harris, John Clarence D.C.
Harris, Leonard H. N.J.
B.S. 1951, Brooklyn Polytechnic Institute
Harris, Loretta Joan D.C.
Harris, Mary Belle Va.
A.B. 1943, Asbury College
Harris, Mary Louise D.C.
B.S. 1949, D. C. Teachers College
Harris, Patricia Roberts D.C.
A.B. 1945, Howard University
Harris, Ruth Loraine D.C.
B.S. in Ed. 1950, Madison College
Harris, Sidney N.Y.
B.B.A. 1953, College of the City of New York
J.D. 1957, The George Washington University
Harris, Thomas Greer, Jr. Md.
A.B. 1956, University of Maryland
Harris, Wesley Grieves, Jr. Va.
Harrison, Alexander Md.
A.B. in Govt 1953, The George Washington University
Harrison, Allen Hugh, Jr. Va.
A.B. in Govt. 1954, The George Washington University
Harrison, David Va.
Harrison, John Yarling Pa.
Harrison, Lawrence Elliot Va.
A.B. 1953, Dartmouth College
Harrison, Marion Edwyn Va.
A.B. 1951, University of Virginia
LL.B. 1954, The George Washington University
Harrison, Rosalie Thornton D.C.
A.B. 1937, Howard College
A.M. 1945, University of Alabama
Harrison, Thomas Emil Md.
B.E. 1954, Johns Hopkins University
Harrup, Obie Lee, Jr. Va.
Harsh, Nathan James Tenn.
Harsh, Richard Stanley D.C.
B.S. 1948, U. S. Military Academy
Hart, Francis Augustine, Jr. Md.
B.S. 1951, Georgetown University
Hart, John Henry Va.
B.S. in M.E. 1934, Purdue University
Hart, Laurence Cables D.C.
Hart, Leo Joseph D.C.
Hart, Marice Crowder D.C

Hart, Roger Wayne Fla.
Hart, Sonya Bodine N.J.
A.B. 1956, Mary Washington College
Hartgroves, William David Va.
A.B. 1954, St. Lawrence University
Hartley, Henry Md.
Hartley, Janet Wilson D.C.
B.S. 1949, University of Maryland
M.S. 1951, The George Washington University
Hartman, Edward Ward Va.
Hartman, Jerre Bradford Va.
Hartman, Kenneth Franklin Va.
B.S. in Ch.E. 1950, University of Colorado
Hartman, Lewis Perry Va.
A.B. 1954, Goshen College
Hartmann, Ilse Betty D.C.
Hartnack, Karl Wash.
Harton, Charles Edwin N.C.
B.S. 1940, The Citadel
Hartter, William Stephen D.C.
Hartung, Richard A., Jr. Ill.
Hartwell, Michael Va.
Hartwell, Peter Lee Va.
Hartwig, Elinor Linn Va.
Hartwig, Leonard John Va.
Harvey, Alvin MacShayne D.C.
Harvey, Beatrice Morgan N.J.
A.B. 1929, Upsala College
A.M. 1942, New Jersey State Teachers College, Upper Montclair
Harvey, Jack Wayne W.Va.
Harvey, Joseph Spencer D.C.
B.S. in P.E. 1954, The George Washington University
Harvey, Lulie Virginia Md.
Harvey, Richard Md.
Harvey, Susan Laurene Va.
Haskell, Francis Waller N.Y.
B.S. 1928, U. S. Military Academy
LL.B. 1937, University of Michigan
Hass, Robert Irving N.Y.
B.S. in C.E. 1952, Union College
M.B.A. 1957, Harvard University
Hassan, Labib Lotfi Egypt
Hassinger, Ange Belle Cecelia La.
A.B. 1957, Vassar College
Hastings, Benjamin Md.
Hastings, Margaret Jean Va.
Hastings, Margaret Virginia W.Va.
B.S. 1954, West Virginia University
Hatakeyama, Lawrence Fumio D.C.
A.B. 1951, University of Hawaii
Hatch, Lawrence Worth Va.
B.S. in Ed. 1950, Madison College
Hatch, Thomas Donald Calif.
A.B. 1953, San Jose State College
Hatchl, Quentin Roosevelt Va.
B.S. 1934, Stephen F. Austin College
Hatfield, Patricia Ann D.C.
Hatfield, Travis Arnold Va.
Hathaway, Amos Townsend Md.
B.S. 1935, U. S. Naval Academy
Hathaway, William Ernest Va.
Hathorn, Richard Harrington Va.
Hattersley, Richard David Va.
Hatton, Walter George D.C.
A.B. in Ed. 1952, New Jersey State Teachers College, Montclair
A.M. in Ed. 1957, The George Washington University
Haug, Louise Ann Va.

Haug, Robert G. D.C.
Haugan, Gertrude Marion D.C.
A.B. 1952, A.M. 1956, The George Washington University
Hauge, Carroll Obie D.C.
Haughwout, Peter Janse Va.
A.B. 1950, Colgate University
Haughwout, Sarah Jane Va.
Hauke, Mary Elizabeth Va.
B.S. 1956, College of William and Mary
Haun, Billy Tenn.
Hauprich, John Frederick Md.
Hausch, Marion L. Va.
Hauser, Nathaniel William, Jr. Md.
Hauver, Herman Albert Md.
B.S. 1933, Gettysburg College
A.M. 1939, Columbia University
Havens, Daniel Bowles Va.
Haverty, Edward Handiboe Md.
Hawes, James Edmond D.C.
B.S. in E.E. 1957, University of Illinois
Hawes, Roberta Jeanne D.C.
Hawkins, Alan Price Va.
Hawkins, Edward John D.C.
Hawkins, Forrest Glenn W.Va.
A.B. 1956, West Virginia University
Hawkins, Julian Neil N.C.
Hawkins, Kathyaleen Okla.
Hawkins, Leon Edward Mich.
Hawkins, Thomas Preston D.C.
Hawks, George Albert D.C.
Hawvermale, Marilyn Louise Md.
Hayakawa, Kenneth Kiyoshi D.C.
B.M.E. 1957, The George Washington University
Hayashi, Yoshimi Hawaii
A.B. 1950, University of Hawaii
Haycraft, Robert Kenneth Md.
Hayden, Elon Brian, Jr. Md.
Hayden, Mary Helen D.C.
Hayes, Barbara McAllister D.C.
Hayes, Celia Anne Va.
Hayes, Donald Joseph Conn.
B.E.E. 1953, Cornell University
Hayes, Lorenzo Bennye D.C.
A.B. 1951, Miles College
Hayes, Robert Millard Md.
Hayes, Walter Harold, Jr. Fla.
A.B. 1948, University of Vermont
A.M. 1957, The George Washington University
Hayes, William Kenneth N.J.
B.S. 1951, Fordham University
Haynes, Bradley Kane D.C.
Haynes, James Marvin, Jr. D.C.
Haynes, Mary Fernald Md.
Haynes, Nell Henry D.C.
Haynes, William Andrew, Jr. Va.
B.S. in E.E. 1932, B.S. in M.E. 1933, Rose Polytechnic Institute
Haynes, William Preston D.C.
Hays, Charles Va.
B.S. in E.E., B.S. in Math. 1952, University of Michigan
Hays, James Murtagh D.C.
A.B. 1956, University of Maryland
Hazard, George F. Md.
B.S. 1936, Columbia University
Hazlett, Samuel Hervey Fla.
Hazou, Rose Va.
Hazzard, John Patrick, Jr. Del.
B.Ch.E. 1956, University of Delaware

Head, Murdock Md.
D.D.S. 1947, University of Louisville
M.D. 1953, University of Vermont
Head, Nancy Lee D.C.
Headley, Donald Olis D.C.
Headrick, Billy Joe Md.
B.S. 1953, Tennessee Polytechnic Institute
Heald, Edgar Henry Texas
A.B. 1939, Texas Technological College
Healey, Patrick Francis Md.
Healy, Barbara Marie Md.
Heaney, Joe Mac D.C.
Heaney, Marian Theresa D.C.
A.B. 1948, Hunter College
Heap, George Lionel Pa.
B.S. 1930, U. S. Naval Academy
Heaps, Marvin Dale Md.
A.B. 1955, Whitworth College
Hearn, Maureen Walworth D.C.
Hearton, Lenard Earl Md.
Heasley, Ross Edward D.C.
Heater, Thomas Hendrix, Jr. D.C.
Heath, Gordon Richardson Va.
B.S. 1936, University of Maine
Heath, William Raymond Va.
B.S. in Ed. 1951, Mansfield State Teachers College
Heatherington, James Rufus, Jr. Va.
A.B. 1954, College of William and Mary
Heaton, William Edmond Ind.
B.S. in M.E. 1943, Purdue University
Hebel, Roy Bernard D.C.
Heberle, John Joseph D.C.
Hecht, Elizabeth Va.
A.B. 1936, New York University
Hecht, Joan Harriet Va.
Heck, Albert Paul Herman Md.
Heckathorn, John Henry Md.
B.S. in C.E. 1930, University of Idaho
Hecker, Irwin Canada
Hecker, Richard Md.
B.S. 1954, U. S. Merchant Marine Academy
Heckman, Bernard Alvin D.C.
Heckman, Stanley David D.C.
Hedbawny, Alfred L. N.Y.
B.S. 1939, New York University
LL.B. 1955, Georgetown University
Hedberg, Shirley Lorraine Bovard Colo.
A.B. 1949, A.M. 1951, University of Denver
Hedley, Lucile Va.
A.B. 1952, University of Richmond
Hee, Olman Md.
B.S. 1938, University of Minnesota
Heer, Carole Helen D.C.
A.B. 1954, Mary Washington College
Heffelfinger, Thomas Browning Md.
Heffernan, Richard Thomas Va.
Heffner, Walter William Pa.
Heflin, Edward Murray D.C.
Heflin, Jesse Franklin Va.
Heflin, Rowena McCrae D.C.
Hefner, Donald Lee D.C.
Hege, Doris Lee D.C.
Heginbotham, Erland Howard D.C.
A.B. 1954, Stanford University
Hegle, William Edwin D.C.
B.S. 1949, Georgetown University
Hegly, Barbara Marie Md.

Hegner, James Rowe	Md.
B.S. 1953, M.S. 1954, University of Illinois	
Heide, John Paul	S.D.
B.S. in E.E. 1957, South Dakota School of Mines and Technology	
Heiderman, Carol Bird	Va.
Heil, Michael Montgomery	Md.
Heiler, Frederick Julius	Mich.
Heinbuch, Roy Jennings, Jr.	Va.
Heinke, Lowell Lock	Va.
B.S. in Eng. 1954, Case Institute of Technology	
Heinrich, Ronald Gustav	Iowa
Heintz, Allyn Capron	Md.
B.S. 1935, Sweet Briar College	
A.M. in Ed. 1957, The George Washington University	
Heinz, Madeleine Catherine	D.C.
Heitman, Charles Andrews	Va.
A.B. 1951, Whitman College	
A.B. 1955, University of Washington	
Heitmann, William Arthur	Va.
B.S. in C.E. and E.E. 1939, University of Cincinnati	
Heitsman, Frances Ann	Ohio
A.B. 1946, Miami University	
Helbig, Ida	Pa.
Helfin, Bernard	D.C.
A.B. 1951, Rutgers University	
Hellerman, Eli	Md.
B.S. 1956, The George Washington University	
Helling, Donald Clement	Wis.
B.S. 1947, U. S. Military Academy	
J.D. 1951, University of Chicago	
Hellmuth, Ann Theresa	Va.
A.B. 1950, Rosary College	
Helms, James Bruce	Md.
Heltsley, Myna Lee	Ga.
A.B. 1942, University of Kentucky	
A.M. in Ed. 1953, The George Washington University	
Hemmerich, Ronny Dean	Ohio
Hemperley, Bess Marie	La.
Hemperley, John Oliver	La.
A.B. 1957, Northwestern State College	
Henderson, Brownie May	Md.
Henderson, Ethel Cobb	D.C.
A.B. 1949, Fisk University	
Henderson, Herbert Hoover	W.Va.
B.S. 1953, West Virginia State College	
Henderson, John William, Jr.	Va.
Henderson, Louise See	Va.
Henderson, Russell Stewart	D.C.
Henderson, Walter	D.C.
B.S. 1953, U. S. Military Academy	
Henderson, Wayne Olynn	D.C.
Hendifar, Abdolah	Iran
B.S. 1956, University of Maryland	
Hendler, Alvin James	Del.
Hendrickson, Bartlett Roy	Md.
A.B. 1949, Duke University	
Hendriksen, Leah Kirstina	D.C.
B.S. 1932, M.S. 1953, University of Michigan	
A.M. 1936, Columbia University	
Hendrix, Martha Sue	Miss.
Henegar, Harold Hubert	D.C.
B.S. 1936, Southwest Missouri State College	
A.M. 1940, University of Missouri	
Hengesbaugh, Rae Marie	Ohio
A.B. 1956, Seton Hill College	
Henke, Lucile C.	D.C.
Henkes, Claison Henry	Va.
Henkin, James Bailey	D.C.
A.B. 1956, A.M. 1957, The George Washington University	
Henley, Harry Gilbert	D.C.
Henneberger, George Milton	Md.
B.S. 1953, University of Maryland	
Hennessey, James Francis	Md.
B.S. 1956, University of Maryland	
Hennessy, John William	Conn.
A.B. 1951, The George Washington University	
Hennesy, Gerald Craft	Va.
B.S. in B.A. 1948, University of Maryland	
Hennigan, Edward Thomas	Va.
B.S. 1949, Pennsylvania State Teachers College, East Stroudsburg	
Hennings, James Carter	Va.
Henrich, LeRoy Michael	Va.
Henry, Anne Harris	D.C.
A.B. 1949, Texas College of Arts and Industry	
Henry, John Alfred	Maine
A.B. 1952, Bowdoin College	
Henry, John Hugh	Ark.
Henry, Phillip Carl	N.C.
Henry, Rosa Holley	D.C.
B.S. 1952, D. C. Teachers College	
Henry, Shendrine Boyce	N.Y.
A.B. 1940, Hunter College	
Henry, Vertie Davis	D.C.
B.S. in Ed. 1947, West Virginia State College	
Henry, William Lawrence	D.C.
Henry, Willie Roger	D.C.
Henschel, Frederick	Md.
Hensley, Glenda Clarine	Va.
Hentz, Albert Gene	Fla.
Henzes, John Frank	Pa.
Hepner, Edward Harold	Va.
B.S. 1937, Roanoke College	
Herbert, Edward Leslie	Md.
A.B. 1948, The George Washington University	
Herbert, Joseph Loren	D.C.
Herbert, Thomas Oliver	Va.
B.E.E. 1953, Catholic University of America	
Herckner, Katherine Alma	N.J.
Hercules, Wendell Lee	Va.
A.B. 1943, Marquette University	
Hereth. Walter A.	Md.
B.I.E. 1942, Rensselaer Polytechnic Institute	
Herink, La Verne Dale	Md.
B.S. 1952, Iowa State College	
Herkenham, Norman Brill	Colo.
B.S. 1940, A.M. 1947, University of California	
Herman, Donald Charles	Pa.
Herman, John Rufus	Va.
Herman, Martin Neal	D.C.
Herman, Monte Arnold	D.C.
A.B. 1956, The George Washington University	
Herman, Murray	N.Y.
Herman, Ruth Lois	D.C.
Herndon, David Eugene	D.C.
Herold, Margaret Ann	Va.

Herr, Margaret Elizabeth	Ecuador
Herr, Norman Lee	Va.
Herr, Robert Roy	Va.
B.S. in Ed. 1951, Kent State University	
Herriman, Melvin Davis, Jr.	D.C.
Herrin, Joe Donald	Ala.
Herrlin, Ralph Carl	Va.
B.S. 1950, Bradley University	
Herrmann, Arthur Paul, Jr.	Va.
Hersh, Sidney Robert	D.C.
Hershberger, Hazel Kuhns	D.C.
Hersman, Marion Frank	Va.
B.S. 1953, Ohio State University	
Ph.D. 1956, University of Illinois	
Herstein, Louis Arthur III	Md.
B.S. 1950, University of Maryland	
Hertel, George Samuel	Md.
Hertelis, Aina	D.C.
Hertig, David Hiner	Va.
Hertz, Martin Arnold	D.C.
Hertz, Pearl Fennell	Md.
A.B. 1938, University of Wisconsin	
Hervey, George Merrill	Va.
Herz, Harriet Sheila	D.C.
B.S. 1957, Brooklyn College	
Herz, Robert Richard	Nev.
B.S. 1951, Columbia University	
Herzfeld, Henrich Wolfgang	D.C.
Diploma 1940, Ingenieurs Technische Universal, Germany	
Hesaltine, Charles Edwin	Va.
A.B. 1954, The George Washington University	
Heslin, Joseph Alexander, Jr.	La.
Hess, Willard Perry	Md.
Hesse, Carole Theresa	D.C.
Hesse, Walter Rolf	D.C.
Hessenaur, Lloyd Edward	Mich.
B.S. in Eng. Law 1955, LL.B. 1957, Wayne State University	
Hessinger, Richard William	Md.
B.S. 1949, Muhlenberg College	
Hetzel, June Elizabeth	D.C.
Heurtematte, Julio Ernesto, Jr.	Panama
B.S. 1957, U. S. Military Academy	
Hewitt, Beven Raymond	S.C.
Hewitt, Clifford Adelbert	Va.
Phar.G. 1937, Columbia University	
B.S. 1956, The George Washington University	
Hewitt, Kyra Mosél	Va.
A.B. 1956, The George Washington University	
Heybey, Otfried Willibald Georg	Md.
Heymann, Ann Ross	Pa.
Hice, Larry Charles	Va.
Hicken, George Malcolm	Md.
Hickey, George Michael	Md.
Hickey, Sally Jane	Md.
Hickey, William Joseph, Jr.	D.C.
B.S. 1949, University of Missouri	
Hickman, Clarence Poe	Md.
Hickman, Ferrin Dixon, Jr.	Md.
Hickman, Joseph Thomas	D.C.
B.S. in Ed. 1956, Wittenberg College	
Hicks, Dana Minter	W.Va.
B.S. 1954, West Virginia University	
Hicks, Donald Lamar	Tenn.
Hicks, Horace Edward, Jr.	D.C.
Hicks, John Turner Lamartine	Va.
Hicks, Wilburn Stewart	Fla.
Hickson, Lula Jane	D.C.
A.B. 1956, The George Washington University	
Higdon, Robert Ainsworth	D.C.
A.B. 1955, Randolph-Macon College	
Higdon, Robert Earl	D.C.
Higgins, Ann Cochran	D.C.
Higgins, Helen Blanche	D.C.
Higgins, Richard Mark	Md.
B.S. in M.E. 1942, Illinois Institute of Technology	
Higgs, George Donald	Va.
B.S. 1953, University of Maryland	
Higgs, George LeRoy	Va.
High, Joe Benton	D.C.
B.S. 1954, The George Washington University	
High, Roy F.	W.Va.
Highfield, Ariene Dorothea	Pa.
Hight, Warren D.	Md.
Higinbotham, Gaynelle McClung	Va.
B.S. 1948, Fairmont State College	
Hilberg, Frank Clarence, Jr.	Del.
A.B. 1956, University of Virginia	
Hilderley, Clifton Tabor, Jr.	Mich.
B.S. in C.E. 1952, Michigan College of Mining and Technology	
Hildreth, Arthur McLean	Md.
Hiles, Elmer Raymond, Jr.	D.C.
Hill, Arlow Fielding	Va.
A.B. 1951, The George Washington University	
Hill, Dennis Wesley	Va.
Hill, Edward Weathers, Jr.	Md.
B.S. in Eng. 1950, The George Washington University	
Hill, Gail Brown	W.Va.
Hill, Harold Clinton	Va.
Hill, Harrie Edward, Jr.	Md.
Hill, Henry William	Miss.
B.S. 1947, U. S. Military Academy	
Hill, Howard Thiebaut	D.C.
Hill, James Douglas	D.C.
Hill, James Leonard	Iowa
Hill, James Merwyn	Va.
B.S. in P.E. 1956, The George Washington University	
Hill, Joseph Andrew	La.
A.B. 1939, Lynchburg College	
LL.B. 1949, Louisiana State University	
LL.M. 1951, The George Washington University	
Hill, Joyce	Texas
Hill, Joyce Irene	Md.
Hill, Peter Proal	D.C.
A.B. 1948, Tufts University	
A.M. 1953, Boston University	
Hill, Raymond Alexander	Md.
B.S. in E.E. 1950, Agricultural and Technical College of North Carolina	
Hill, Suzanne Doane	Va.
A.B. 1953, A.M. 1955, The George Washington University	
Hill, Thomas Eugene	Md.
A.B. 1954, Hanover College	
Hill, Vernon Lowell	Md.
B.B.A. 1948, University of Minnesota	
Hill, Warren Dean	Ohio
B.S. 1955, Ohio State University	
Hillam, Ray Cole	D.C.
A.B. 1955, University of Utah	
Hilleary, Joseph Benton	D.C.
Hilleary, William Michael	D.C.
Hillebrand, Anna Elisabeth	D.C.
Hiller, Donald Edward	Md.
Hillery, Glenn Charles	Wis.
Hilley, Arthur Grady	D.C.

Hilligoss, Richard Earl Va.
A.B. 1949, University of Akron
Hillman, Arthur Jerry Wis.
B.S. 1950, LL.B. 1955, University of Wisconsin
LL.M. 1957, The George Washington University
Hillman, John Frederick Va.
B.S. 1956, Webb Institute of Naval Architecture
Hills, Felicia Flores Md.
A.B. 1937, Union College
Hillyard, Opal Marie Luttrell Va.
Hilsenrath, Ernest D.C.
Hilton, Paul Edward D.C.
Himes, Joseph Ellsworth D.C.
Himes, Philip Jerome Va.
A.B. 1944, George Pepperdine College
Hinchliffe, Joseph Gabrill N.J.
B.S. 1956, College of the Holy Cross
Hindmarsh, Carol Calif.
Hine, Jonathan Trumbull Mass.
B.S. 1941, U. S. Naval Academy
Hinely, William Ray Ga.
Hink, Frederick Paul D.C.
Hinkle, John Edward Texas
B.Mus.Ed. 1957, Phillips University
Hino, Edward John Pa.
Hinrichs, Margo Letty D.C.
A.B. 1957, Goucher College
Hinson, James Lill Md.
B.S. 1953, University of Maryland
Hinton, George Fred D.C.
A.B. 1937, Alleghany College
Hinton, Thomas Gerald W.Va.
Hirai, Seichi Hawaii
A.B. 1950, University of Hawaii
Hirsch, Arthur Ernest Md.
B.S. 1940, College of the City of New York
Hirsch, Herbert Bernard D.C.
Hirsch, Julia King D.C.
A.B. 1956, Middlebury College
Hirschfield, Rosalie Rebecca D.C.
Hirschy, Roger Earl Ind.
B.S. 1956, Taylor University
Hitchcock, John Grady Va.
Hite Aubrey Kenneth D.C.
Hite, Nancy Lea D.C.
Hitselberger, Joseph Gregory Va.
A.B. 1951, Georgetown University
LL.B. 1957, The George Washington University
Hitt, Betsey Evelyn D.C.
Hix, William Randolph D.C.
Hixson, Clayton Allan D.C.
B.S. 1957, Fairmont State College
Hladchuk, Leon D.C.
Hlass, Ibrahim Jerry Va.
B.M.E. 1949, North Carolina State College
lubb, Julius George Md.
A.B. 1929, Gettysburg College
Ed.M. 1949, Johns Hopkins University
o, Melvin K. W. Hawaii
A.B. 1954, University of Hawaii
o, Min Kwan D.C.
oak, Leslie Mackintosh Md.
B.S. 1951, University of Maryland
oang, An Thi Vietnam
A.B. 1957, University of Western Ontario

Hoar, Marion Elwin Md.
Hoban, John Charles Md.
B.S. in B.A. 1948, University of Scranton
Hobart, Thomas Duncan Va.
B.S. 1941, Virginia Polytechnic Institute
Hobbs, Donald Arnold Va.
Hobbs, Henry Jules, Jr. Va.
Hobbs, James Everett Ga.
A.B. 1954, University of Georgia
Hobbs, Moses Edward, Jr. Va.
Hobbs, Perda Va.
B.S. in Ed. 1950, Radford College
Hobby, Edna Joan Ga.
Hobson, Robert Wayne II Va.
Hoch, Carol Ann Va.
Hochman, Mark Nelson D.C.
Hochstein, Herbert Donald Md.
B.S. 1956, University of Maryland
Hocker, Anna Sue Ariz.
Hocker, Richard Kelly Ariz.
A.B. 1955, University of Arizona
Hodge, David MacMahan Va.
B.S. 1949, Georgetown University
Hodge, Doris Jeanette Md.
Hodge, Gary Ferel Texas
Hodge, John W., Jr. D.C.
B.S. 1953, Agricultural and Technical College of North Carolina
Hodges, Dan Allen Va.
Hodges, Howard Berkley, Jr. Va.
A.B. 1952, University of North Carolina
Hodges, Martin Noel D.C.
B.S. 1954, Lynchburg College
Hodges, Willard Jefferson, Jr. Ala.
LL.B. 1937, University of Alabama
LL.M. 1950, The George Washington University
Hodgson, Geraldine N.Y.
Hoehl, Herbert George Md.
B.S. 1956, University of Maryland
Hoelman, Louis Harlebaus II D.C.
Hoerner, William S. Va.
Hoerr, Oscar Donald Ohio
Hoes, Donald Allen Va.
B.S. 1954, University of Cincinnati
Hoff, George Frederick Mo.
A.B. 1957, William Jewell College
Hoff, Harvey D.C.
Hoffman, Beatrice Claire Pa.
A.B. 1939, University of Pennsylvania
Hoffman, Charles Jacobs D.C.
Hoffman, Charles Michael Va.
Hoffman, Conrad Richard Va.
A.B. in Govt. 1950, The George Washington University
Hoffman, Doris Marie D.C.
Hoffman, Edward Lewis Va.
B.S. 1929, Roanoke College
A.M. 1937, The George Washington University
Hoffman, Marilynn Frances Ohio
Hoffman, Mary Elizabeth D.C.
Hoffman, Paul Louis D.C.
Hoffman, Richard Clayton Va.
A.B. 1950, Princeton University
LL.B. 1955, Harvard University
Hoffman, Stanford Emanuel Md.
B.S. 1957, Villanova University
Hoffman, Warren Joseph D.C.
B.S. 1956, D. C. Teachers College

Hoffman, Wesley Groff A.B. 1956, University of Michigan	Mich.
Hofgren, Daniel W.	N.Y.
Hogan, Barbara Carlton	Va.
Hogan, Charles Dedrich	D.C.
Hogan, Douglas LeRoy B.S. 1950, The George Washington University M.S. 1954, Massachusetts Institute of Technology	Md.
Hogan, Edward Eugene A.B. 1956, A.M. 1957, New Mexico Highlands University	N.M.
Hogan, William Francis	Va.
Hogenson, Marilyn Joan	D.C.
Hogg, Charles Edgar	D.C.
Hogg, John Barrier	Miss.
Hogroian, Paul B.Ch.E. 1950, College of the City of New York	Va.
Hogue, Freya Lynn	D.C.
Hogue, Raymond Miller B.S. 1941, University of Florida	Fla.
Hoiberg, Harold Duane	Va.
Hoik, Daniel Batchelder A.B. 1955, Brown University	Va.
Holbrook, Charles Chilton B.S. in C.E. 1939, University of Maryland	Md.
Holcomb, William Joseph B.S. 1951, St. Bonaventure University LL.B. 1957, Georgetown University	Va.
Holden, Mary Teresa Anne Cummings	Mass.
Holder, Eugene Loyce A.B. 1953, University of California at Los Angeles A.M. in Govt. 1956, The George Washington University	Calif.
Holder, Hortense	Texas
Holgate, Shirley Ann A.B. 1955, Winthrop College	S.C.
Holiber, Jerome Allen B.I.E. 1953, Georgia Institute of Technology	D.C.
Holien, Larry Theodore	Md.
Holladay, Cornelius Allen B.S. 1950, Georgetown University	D.C.
Holladay, Natalie Venable B.S. 1931, Longwood College Ed.M. 1951, University of Hawaii	Hawaii
Holland, Francis Jeremiah A.B. 1949, Catholic University of America	D.C.
Holland, Harold Herbert A.B. in Govt. 1957, The George Washington University	Va.
Holland, Harrison Melsher A.B. 1944, University of Washington A.M. 1949, Columbia University	Wash.
Holland, Helen Joan	Va.
Holland, James Francis	Md.
Holland, Kenneth Norman B.S. 1950, LL.B. 1953, University of Wisconsin	D.C.
Holland, William Bryan	Va.
Holleman, Vernon Wilson, Jr.	Md.
Holler, Joanne Elsie	Md.
Hollett, Bernice Carol	D.C.
Holley, Roy Lamar B.B.A. 1951, University of Texas	Ala.
Holliday, Dorothy Jane	D.C.
Hollingshead, Robert Sullivan, Jr. A.B. 1949, The George Washington University	Va.
Hollingsworth, Horace Swain, Jr. A.B. 1954, Franklin and Marshall College	N.J.
Hollinshead, Ariel Cahill A.B. 1951, Ohio University A.M. 1955, The George Washington University	Pa.
Hollis, Vincent Wentworth, Jr. A.B. 1954, New York University	N.Y.
Hollister, William Wallace A.B. 1938, Ohio Wesleyan University Ph.D. 1947, Columbia University	Va.
Holman, Jere Randolph	Pa.
Holman, Mary Alida A.B. in Govt. 1955, A.M. in Govt. 1957, The George Washington University	Texas
Holmberg, Mary Electa	Pa.
Holmberg, William Harold B.S. 1956, University of Oklahoma	Okla.
Holmes, Frank John	Md.
Holmes, Henry Allen A.B. 1954, Princeton University	D.C.
Holmes, Patricia Sue	D.C.
Holsten, Joseline	Md.
Holt, Donald Edwin A.B. 1954, University of California	Va.
Holt, Eleanor Annabelle	D.C.
Holt, Elmer Dean	Va.
Holt, John Emory	D.C.
Holt, Marjorie Gladys	D.C.
Holt, Mayme Wilkins A.B. 1946, Howard University A.M. 1952, Catholic University of America	Va.
Holt, Samuel Ellis, Jr.	D.C.
Holt, William Harry B.S. in Eng. 1957, The George Washington University	D.C.
Holton, Clifford Phillip	Mass.
Holtz, Rose Irene	D.C.
Holtzer, James Anthony A.B. in Govt. 1957, The George Washington University	Pa.
Holtzman, Herbert Miley, Jr.	Va.
Holtzman, Marilyn A.B. 1953, The George Washington University	D.C.
Holup, John Frank B.S. in P.E. 1954, The George Washington University	Va.
Holzberlein, Robert Riley	Va.
Homayouni, Masud B.S. 1953, Michigan State Normal College M.S. 1954, University of Michigan	Iran
Homer, Mary Elizabeth B.S. in Ed. 1950, Kansas State University A.M. in Ed. 1952, The George Washington University	Mo.
Honadle, David E. B.S. 1957, University of Maryland	Pa.
Honeycutt, Gary Clark B.S. 1954, University of Arkansas	Va.
Honikman, Leslie Allen	Md.
Honold, Robert Arthur	Mo.
Hood, Fred Ellis, Jr.	D.C.
Hood, Mildred Booth	D.C.
Hooks, Dorothy Anne A.B. 1952, La Grange College	Fla.
Hooper, Melvin Dale	D.C.
Hoopes, Robert Darlington	Va.

Hoover, Charles Harold	Md.
B.S. 1938, Maryland State Teachers College, Frostburg	
Ed.M. 1954, University of Maryland	
Hoover, Charlotte Lovelace	Va.
Hoover, Joann Nolan	Md.
B.S. in Ed. 1953, Pennsylvania State Teachers College, Shippensburg	
Hoover, John Samuel	D.C.
B.S. 1954, University of Maryland	
Hoover, Rodney Leroy	Md.
B.S. in Ed. 1953, Pennsylvania State Teachers College, Shippensburg	
Hoover, Roy Rollin	N.J.
Hoover, William Jay	Va.
B.S. 1950, M.S. 1954, University of Illinois	
Hopkins, Alice Rosetta	D.C.
A.B. 1950, Virginia Union University	
Hopkins, Carl Dewey, Jr.	D.C.
Hopkins, Carol Eckley	Va.
A.B. 1955, Bryn Mawr College	
Hopkins, Charles Victor	Va.
Hopkins, Claud Hall	Md.
Hopkins, H. Palmer	Md.
B.S. 1936, Oklahoma Agricultural and Mechanical College	
Ed. M. 1948, University of Maryland	
Hopkins, James Duane	Va.
Hopkins, John Root	D.C.
B.S. in E.E. 1953, Virginia Military Institute	
Hopkins, Mabel R.	D.C.
Hopkins, Marlene Fern	Iowa
Hoppe, John Henry Earl, Jr.	Va.
B.S. 1940, Washington College	
Hopper, Ann Craig	Md.
Hoppmann, Kurt Heinz	Va.
Hopson, Claude Thomas	Md.
Hoptman, Julian	N.Y.
B.S. 1948, College of the City of New York	
A.M. 1950, Pennsylvania State University	
Hor, Barbara Lillian	D.C.
Horan, Harold Stratton	D.C.
Horenstein, Joseph Chaim	D.C.
Horiuchi, Harold Shigeo	Md.
Horn, Carroll Milton	Va.
Horn, Henry Joseph	Va.
B.S. 1941, Lehigh University	
M.D. 1950, The George Washington University	
Hornback, Russell H.	Va.
Hornbeck, Wallace Dean	Md.
Horne, Marion Alfred	Va.
Horner, Fred Thomas	N.J.
Hornestay, David Hart	N.Y.
B.B.A. 1957, College of the City of New York	
Horning, Ross Charles, Jr.	S.D.
A.B. 1948, Augustana College	
A.M. in Govt. 1952, The George Washington University	
Horowitz, Emanuel	Md.
B.S. 1948, College of the City of New York	
M.S. 1956, The George Washington University	
Horowitz, Eugene Gary	D.C.
Horowitz, Helen	Va.
Horst, Edwin Lewis	D.C.
B.S. 1957, University of Pennsylvania	
Horstman, Sanford Welsh, Jr.	Va.
Horton, Donald Jurney	Nev.
Horton, Gloria A.	Md.
Horton, Hattie Grace	Md.
B.B.A. 1940, University of Texas	
Horton, John Harold	Va.
B.S. in M.E. 1948, University of Buffalo	
Horton, Michelle Lestaevel	Va.
Horton, Thomas Frederick	Md.
B.S. 1952, University of Maryland	
Horton, William Stanley	Va.
A.B. 1949, Michigan State University	
Hoshide, Toshio	Md.
Hosley, Edward Wendell	D.C.
B.S. in F.S. 1957, Georgetown University	
Hosmer, Howard, Jr.	D.C.
A.B. 1954, Pennsylvania State University	
Hostetter, Darwin Robert	Pa.
B.S. 1956, Pennsylvania State University	
Hostetter, Robert Dale	Oreg.
B.S. 1941, Colorado State University	
M.F. 1943, Duke University	
Hostick, Carroll M.	Md.
Hothersall, Eugenia Lockhart	D.C.
Hotovy, Blanche B.	Nebr.
Hough, Elizabeth Ann	N.Y.
A.B. 1957, Cornell University	
Houghton, Edward Arnold	Va.
Houghton, James Richard	Va.
Houghton, Russell Beverly	Md.
B.S. in E.E. 1939, Oklahoma University	
House, Homer Charles	D.C.
House, Lawrence Samuel	Md.
House, Madison	Texas
B.S. in E.E. 1956, University of Texas	
House, Margaret Irene	Va.
House, Miriam Shaw	Va.
House, Walter Grant	W.Va.
B.S. in Ch.E. 1943, West Virginia University	
Houseman, Monyeen Mary	D.C.
Houser, Gladys Edwina	N.C.
Houser, Verlys June	Md.
Houston, Betty M.	D.C.
Houston, James John	Pa.
B.S. 1954, University of Scranton	
Houston, Robert Howard	Va.
Houston, William Adams, Jr.	Va.
B.S. 1958, U. S. Naval Academy	
Hovdé, Charles David	D.C.
Hovis, Moses Wayne	Fla.
Howard, Anne Dudley	Va.
A.B. 1954, College of William and Mary	
Howard, Cornelius Stevens, Jr.	Fla.
Howard, Donald Lee	Md.
Howard, Dwight Eugene	Va.
B.S. 1950, Iowa State College	
Howard, Francis Borgia	Va.
B.M.E. 1951, Ohio State University	
Howard, Guy Oliver	Okla.
Howard, Jay William	D.C.
A.B. 1955, The George Washington University	
Howard, John Michael	D.C.
Howard, Kenneth LeRoy	Va.
Howard, Rosemary Evelyn	D.C.

Howard, Rosser Lee D.C.
Howden, Frederick Bingham N.M.
A.B. 1955, University of New Mexico
Howe, Hollis James Va.
B.S. 1951, State University of New York
Howe, Marion Sheridan Md.
Howell, Lloyd Francis Va.
Howell, Robert Kremer Md.
Hower, Floyd Early, Jr. Pa.
Hower, Mary Gound Va.
A.B. 1950, College of William and Mary
Hower, Paul Harrison Va.
Howerton, John Benjamin Va.
A.B. 1949, Richmond College
A.M. 1956, University of Richmond
Hoyar-Millar, Arthur James England
Howie, John Virgil Miss.
Howison, Irene Santl D.C.
B.S. in Phar. 1949, The George Washington University
Howland, Albert Ray, Jr. Va.
Howland, Richard Cabot N.Y.
Howley, John Reed Va.
A.B. 1943, Georgetown University
Howlin, William Charles D.C.
Howson, Hubert Farnham N.Y.
A.B. 1954, University of Massachusetts
Hoxie, Herbert Emerson Va.
A.B. 1947, Michigan State University
LL.B. 1950, University of Michigan
Hoyle, Anne Mildred Md.
B.S. in Ed. 1941, University of Maryland
A.M. 1946, Columbia University
Hren, John Anthony D.C.
B.S. 1957, University of Wisconsin
Hruska, Quentin Jerold Nebr.
Hsieh, Ching-Yao D.C.
A.B. 1939, St. John's University, China
Huang, Dick D.C.
Hubach, Fred Willis N.Y.
A.B. 1954, Western Maryland College
Hubbard, Donald N.Y.
Hubbard, Ruth Dennis D.C.
A.B. 1957, The George Washington University
Hubble, Edna Nadine Md.
Huber, Darlene Julia Va.
Huber, Donald Keith Va.
B.S. 1953, J.D. 1956, Northwestern University
Huber, Genevieve Md.
Huber, Margaret Ann Md.
A.B. 1952, St. Joseph College
Huber, Robert Crouse Md.
A.B. 1950, Lehigh University
Hublot, Marie-Jeanne Christine D.C.
Huch, Angela Catherine D.C.
Huddle, Norman Piercy Ill.
B.S. 1946, Marquette University
Hudelson, Ross Dale Okla.
Hudgins, John Jefferson D.C.
LL.B. 1948, LL.M. 1949, The George Washington University
Hudson, Jack Gardner Md.
B.S. 1943, U.S. Naval Academy
Hudson, Jerry Rayvon Fla.
Hudson, Lloyd George Va.
Hudson, Patton Thomas Va.

Huey, Dolores Mae D.C.
Huey, Julia Elaine D.C.
B.S. 1956, Alabama Polytechnic Institute
Huey, Robert Carter D.C.
Huf, William Frederick Va.
B.S. in E.E. 1930, Washington University
Huff, Richard Lee Pa.
A.B. 1955, Lincoln University
Huffer, Harry Robert Md.
B.S. 1954, University of Maryland
Huffman, Ethel Tucker Md.
Huffman, Eugene Kenneth D.C.
A.B. 1955, College of Wooster
Huffman, John Norris Colo.
Huffman, Ray Thomas Ohio
B.S. 1956, Bowling Green State University
Huffman, William Harry D.C.
Hug, Thomas Francis N.J.
A.B. 1957, Seton Hall University
Hugar, Andrew Lester Md.
B.S. 1950, Pennsylvania State Teachers College, Lock Haven
Ed.M. 1955, Pennsylvania State University
Huggins, David Sherwood Hawaii
Huggins, Ruth Pearson Va.
B.S. 1943, Connecticut State Teachers College, New Haven
Huggler, Edward Hartley Pa.
B.S. 1952, Pennsylvania State University
Hughes, Ann Hightower Ala.
Hughes, Carolyn L. D.C.
B.S. 1955, Alabama College
Hughes, Earnest Earl Md.
A.B. 1951, Boston University
Hughes, Frederick Earl Va.
Hughes, James Edward Ind.
Hughes, James Hope Okla.
B.S. in M.E. 1948, University of Oklahoma
Hughes, Robert Bruce Nebr.
B.S. 1955, Seattle University
Hughes, Robert Jobson Va.
LL.B. 1951, University of Louisville
Hughes, Thomas Burdett Ala.
B.S. 1955, Alabama State Teachers College, Troy
Hughes, Thomas Emory Md.
A.B. 1946, St. Mary's Seminary and University
Hughetti, Dominic D.C.
Hughitt, Jerry Keefe Va.
Hugo, Jean Duff D.C.
Hui, Peter Shui Pui D.C.
Huizinga, Arys Henry Md.
B.S. 1949, University of Illinois
Hulfish, Thomas Andrew Va.
Hull, Suzanne Berry Va.
Hulley, James Pierce D.C.
B.S. 1924, U. S. Military Academy
A.M. in Ed. 1951, The George Washington University
Hum, Franklin Richard D.C.
Hum, James Peter D.C.
Humes, James Calhoun D.C.
Hummel, Barbara Lavine D.C.
Hummel, Donald Joseph D.C.
B.S. 1956, The George Washington University

Hummel, Lucille Kathryn A.B. 1957, Albright College	Pa.
Humphrey, James Ronald	D.C.
Humphreys, Keith Stratford B.S. 1955, Brigham Young University	Wyo.
Hundt, Viola Fredina B.S. 1943, University of Wisconsin	Va.
Huneidi, Fuad	D.C.
Hung, Cao Van	D.C.
Hung, Ching Chong A.B. 1927, San Diego State College A.M. 1929, Columbia University D.D. 1957, Burton College and Seminary	D.C.
Hung, Kin Lincoln B.S. 1957, University of Maryland	D.C.
Hungate, Richard Wynne A.B. 1956, Pomona College	Calif.
Hunnicutt, Ralph Walter	Calif.
Hunsaker, Leland Stanford B.S. 1957, Utah State Agricultural College	Utah
Hunt, John Chelsea	Conn.
Hunt, Lee M. B.S. 1956, American University	Va.
Hunt, Richard Coulter Drum B.S. 1930, U. S. Naval Academy A.M. 1950, University of Pennsylvania	D.C.
Hunter, Arthur Gilroy	D.C.
Hunter, Charles Maxwell IV	D.C.
Hunter, Herbert Eston	Va.
Hunter, Robert A.B. 1956, Tufts University	Va.
Hunter, Thomas Braden B.S. in Ch.E. 1956, Case Institute of Technology	Ohio
Huntley, Charles Clement	N.J.
Huntley, William Robert	N.C.
Huntsinger, Fritz Roy A.B. 1957, Stanford University	Calif.
Huntsman, Lawrence Darrow B.S. 1956, Pennsylvania State University	Va.
Hurlburt, Ward Bullard A.B. 1956, The George Washington University	D.C.
Hurley, Charles Warren	Ohio
Hurley, Elsie Murtagh B.S. 1939, College of the City of New York A.M. in Ed. 1953, The George Washington University	Va.
Hurley, Robert Edmund A.B. 1935, Bowdoin College	Mass.
Hurst, Carl Wilson, Jr. A.B. in Govt. 1949, The George Washington University	Va.
Hurst, Susan Emily A.B. in Govt. 1955, The George Washington University	Va.
Hurt, Charles Raymond A.B. 1954, M.S. 1956, Tennessee Agricultural and Industrial State University	Tenn.
Hurt, Norma Elizabeth	D.C.
Hurwitz, Allan Wade A.B. 1952, M.S. in Ed. 1954, Syracuse University	D.C.
Hurwitz, Edward A.B. 1952, Cornell University	N.Y.
Hurwitz, Gerald Quincy A.B. 1953, The George Washington University	Md.
Hurwitz, Phyllis Joan	D.C.
Hury, Pauline Martha	Conn.
Husar, Cornelius Joseph B.S. 1956, U. S. Merchant Marine Academy	Md.
Husar, Francis Stephen B.S. 1957, University of Maryland	Md.
Huseby, Stuart Sydney	Va.
Huss, Donald Charles B.B.A. 1956, University of Toledo	Ohio
Hussion, Edward Eugene	D.C.
Huston, Evelyn Carole	D.C.
Huston, Louise Clark	Va.
Huston, Robert Cameron, Jr.	Va.
Hutcheson, Fred Denny	D.C.
Hutchins, Jack Randolph B.S. in C.E. 1949, Montana State College	Ethiopia
Hutchinson, Charlotte Stanton A.B. 1952, Howard University	D.C.
Hutchison, Alan David B.S. in B.A. 1956, Ohio State University	N.Y.
Hutsko, Richard Leo	Pa.
Hutson, Donald Lee A.B. 1953, Central College	Mo.
Hyatt, Carolyn Lydia	D.C.
Hyatt, Cornelia Loretta	D.C.
Hyatt, Quentin Daryl	Pa.
Hyde, Herbert Kenneth, Jr. A.B. 1955, University of Oklahoma	Okla.
Hyde, Laron De Los, Jr. A.B. 1954, Brigham Young University	Idaho
Hyde, Rowland B.S. 1951, University of Maryland	Va.
Hyde, Thomas Baskerville B.S. in C.E. 1949, South Dakota School of Mines and Technology	Wyo.
Hyden, Eugene Edward	D.C.
Hyland, Catherine Marie	D.C.
Hyman, Morton Keroes	D.C.
Hyman, Paul Julius B.S. 1955, Cornell University	N.Y.
Hynes, Paul Allen	D.C.

I

Ianni, Ernest Thomas B.C.E. 1950, University of Delaware	Va.
Iascone, Catherine Elena A.B. in Ed. 1945, The George Washington University	D.C.
Iben, Albert Bernhard	Va.
Iden, Kathryn Irene B.S. 1955, University of Maryland	Md.
Iden, Vernon Marshall, Jr.	Va.
Iff, Anita	Switzerland
Iglehart, Frances Claire	Md.
Ignacio, Macario C., Jr.	D.C.
Ihara, Hideo B.E.E. 1951, The George Washington University	D.C.
Ihrig, Katherine Anna A.B. 1930, University of Wisconsin A.M. in Ed. 1950, The George Washington University	Ohio
Ijams, Richard Leslie	Va.
Ikari, Norman Saburo A.B. 1949, University of California at Los Angeles	D.C.
Ikari, Panalee Thomson A.B. 1943, University of Southern California	Md.
Iliescu, John, Jr. B.S. 1952, D.D.S. 1954, University of Illinois	Ill.

Mass.
Imlah, Ann Gordon
A.B. 1955, Swarthmore College
A.M. 1956, Fletcher School of Law
and Diplomacy Pakistan
Imran, Syed Alay
B.S. 1945, Aligarh Muslim University,
Pakistan D.C.
Ince, James Allen Md.
Ingerson, Martha D.
A.B. 1929, Hardin-Simmons College
A.M. 1956, University of Maryland R.I.
Ingle, Frances Blair Va.
Ingley, James Myers, Jr. D.C.
Ingram, Bessie Adele D.C.
Ingram, William Horace Ill.
Inman, Katherine Ropiequet
B.S., A.B. 1939, University of Illinois
A.M. 1941, State University of Iowa D.C.
Inman, Robert Milton Va.
Innamorato, Alexander D.C.
Inoff, Carolyn Dawn Japan
Inoue, Atsuko Va.
Inscoe, Carolyn Susie N.C.
Inscoe, Joseph Kenneth
B.S. 1948, Davidson College
M.S. 1956, The George Washington
University D.C.
Ireland, Evelyn Craig
B.S. 1943, Virginia State College
A.M. 1952, Catholic University of
America Maine
Irish, Bradley Beecher Md.
Irlbacher, John Michael Va.
Irvin, John Michael D.C.
Irvine, Alison Gilchrist Md.
Irvine, Harry Winfree, Jr. D.C.
Irving, Doris Ruth Va.
Irwin, Judith Rose Va.
Irwin, Lafayette Kay
B.S. in M.E. 1949, University of
Alabama Pa.
Irwin, Ruth Anne N.Y.
Isaacs, Morton Md.
Isaacson, Jerene Sugarman
B.S. 1950, D. C. Teachers College Va.
Isaacson, Russell Harold Md.
Isaminger, Melvin James
A.B. in Govt. 1955, The George
Washington University Pa.
Isbell, Jacqueline Tucker Va.
Isbell, Michele Mazeran Va.
Iseman, Norma Frances Md.
Isenberg, Lois Cremins Md.
Iskowitz, Rita
B.S. 1953, University of Pittsburgh
A.M. in Ed. 1957, The George
Washington University Md.
Ison, Charles Fletcher
B.S. 1948, University of Maryland Va.
Itschner, Gail Sandra Mass.
Ives, Frederic C.
A.B. 1952, Colby College Va.
Ives, James Clinton D.C.
Ivey, Robert Joe D.C.
Ivey, William Thomas, Jr.
A.B. 1950, University of South Carolina Hawaii
Iwamoto, David
A.B. 1947, Walla Walla College
A.M. in Ed. 1952, The George
Washington University Hawaii
Izumi, Francis Masayuki
A.B. 1954, University of Hawaii D.C.
Izumi, Yoshie

J

Wis.
Jabas, Florian Harley
B.S. 1957, University of Wisconsin N.Y.
Jablonka, Mary Byrne
A.B. 1956, Smith College D.C.
Jablonsky, Jean Louise Md.
Jack, Barbara Louise Md.
Jack, Jeanne Carole D.C.
Jack, John Archibald
A.B. in Ed. 1957, The George
Washington University D.C.
Jack, Marie Walter England
Jackling, Michael Brook D.C.
Jackson, Ann Patricia N.J.
Jackson, Audrey
B.S. 1955, Ohio State University Okla.
Jackson, Don Cecil
B.S. 1953, Abilene Christian College Hawaii
Jackson, Dwight Neal Md.
Jackson, Edward Glenn
A.B. 1953, Maryland State College Calif.
Jackson, Edward William D.C.
Jackson, Grace Dodson
B.S. 1937, D.C. Teachers College D.C.
Jackson, Hugh Sanfield
B.S. in E.E. 1948, Queen's University,
Canada Ga.
Jackson, James Edwin
B.S. 1950, Morehouse College D.C.
Jackson, Jeremy Shreve
B.S. 1952, D. C. Teachers College Md.
Jackson, John Payne
B.S. 1954, University of North Carolina La.
Jackson, Kenneth Vance
B.S. 1957, McNeese State College D.C.
Jackson, Lois Jean
B.S. 1956, University of Virginia Mo.
Jackson, Mallett C., Jr.
A.B. 1948, Western Michigan College Va.
Jackson, Marlee Delois Va.
Jackson, Merrill Richard
Mus.B. 1949, Mus.M. 1951, American
Conservatory of Music Calif.
Jackson, Miriam Hope Md.
Jackson, Owen Wilson, Jr. D.C.
Jackson, Regina Bertha
B.S. 1955, D. C. Teachers College D.C.
Jackson, Robert Douglas Md.
Jackson, Vernon Carprew N.J.
Jacob, Arthur
B.S. 1954, Massachusetts Institute of
Technology D.C.
Jacob, Katharine Cree
B.S. 1951, West Virginia Wesleyan
College Md.
Jacobi, Susan Segal Md.
Jacobs, Grace R.
A.B. 1956, University of Maryland D.C.
Jacobs, Irving Leroy Md.
Jacobs, Jack Leroy Md.
Jacobs, James Weiley
B.S. in P.E. 1949, A.M. in Ed. 1952,
The George Washington University D.C.
Jacobs, Joan Florence Fla.
Jacobs, John Frederick
B.S. 1957, Florida State College Va.
Jacobs, M. Ted
B.E. 1932, Vanderbilt University Md.
Jacobs, Marcus
A.B. 1940, University of Pennsylvania Va.
Jacobs, Margaret Green

Jacobs, Stanley Robert Md.
A.B. 1953, University of Maryland
Jacobsen, Bernice Harriet D.C.
Ed.B. 1947, Wisconsin State College, River Falls
A.M. in Govt. 1954, The George Washington University
Jacobsen, Erling Robert Va.
Jacobsen, Merriam J. Wis.
Jacobson, Richard John N.H.
A.B. 1952, St. Anselm's College
Jacobson, William Henry, Jr. Va.
B.S. in E.E. 1957, Oklahoma Agricultural and Mechanical College
Jacoby, Frederick Walter Pa.
B.S. 1947, U. S. Military Academy
Jacocks, Jean Putnam Md.
Jacot, Charles Herbert D.C.
Jacques, Denis Andre Va.
Jaeger, Harold Edward Va.
A.B. 1950, Western Reserve University
Jaeger, Marian Fielding Va.
Jaenicke, Walter Karl D.C.
Jaffe, Annabelle Shrieber Md.
B.S. 1944, University of Cincinnati
Jaffe, Daniel Leonard Md.
B.M.E. 1951, College of the City of New York
Jaffe, Judith Zelda D.C.
Jaffe, Tamara Oreg.
A.B. 1955, Lewis and Clark College
Jager, Elizabeth Rodgers D.C.
A.B. 1945, Smith College
Jagessar, Michael D.C.
Jagger, Bruce Anderson Wyo.
B.S. 1957, University of New Mexico
Jalarak, Kanjit Thailand
LL.B. 1941, University of Bangkok
Jalet, Tuckerman Sears D.C.
Jamborsky, Richard Julius Tenn.
James, Joseph Edward D.C.
A.B. 1951, Howard University
James, Peter Tenn.
B.S. 1954, University of Pennsylvania
James, Shepheard A. D.C.
Jameson, Lee D.C.
Jameson, Nancy Caroline Ohio
Janicke, Mary E. Md.
Janicki, Bernard William Va.
A.B. 1953, A.M. 1955, University of Delaware
Janigian, Richard, Jr. D.C.
B.S. 1956, D. C. Teachers College
Jansen, Wallace Brooks Va.
Janssen, Charles Pendleton Md.
Januszkiewicz, Joseph Va.
B.S. in I.E. 1948, Pennsylvania State University
LL.B. 1952, Dickinson College
Jaroslaw, Belle Riva D.C.
Jarvis, Dale D.C.
B.S. 1956, University of Maryland
Jasiel, John Anthony D.C.
Jason, Paul Aloysius Md.
A.B. 1947, Pennsylvania State University
Jastram, Harold Dudley S.D.
B.S. 1957, South Dakota State College
Jastrow, Robert D.C.
A.B. 1944, A.M. 1945, Ph.D. 1948, Columbia University
Jaswell, Roy P. R.I.
Jaudon, Judith Ann Va.

Jaunrubenis, Andrejs D.C.
Jaworowski, Waldemar Orest N.J.
Jayson, Joyce Loretta D.C.
A.B. 1957, Howard University
Jebb, Marcia D.C.
A.B. 1955, Colby College
Jeckeln, Eva Beatriz D.C.
Jedlicka, Charles, Jr. N.Y.
B.S. 1951, U. S. Merchant Marine Academy
Jefferis, Clifford James Va.
Jeffers, Marinelle Va.
Jeffery, Donald Dyer Va.
B.S. 1957, University of Wisconsin
Jeffery, Donald Robert Md.
A.B. 1951, St. Louis University
A.M. 1955, Catholic University of America
Jefferys, Barbara Mary D.C.
Jeffrey, Charles Thomas Md.
Jeffrey, Peter Ohio
B.S. in B.A. 1955, Ohio State University
Jeffries, Claude Edward Va.
B.S. 1950, U. S. Naval Academy
Jeffries, JoAnn Virginia D.C.
A.B. 1954, American University
Jeffries-Gray, Virginia Elliott D.C.
B.S. 1944, Columbia University
Jehlicka, Kathleen Roberta Okla.
Jenkens, Alton Lawrence Mass.
A.B. 1952, Harvard University
A.M. 1957, Johns Hopkins University
Jenkins, David Bradley D.C.
A.B. 1953, Wesleyan University
M.B.A. 1955, Harvard University
Jenkins, Donn Keyes Md.
B.M.E. 1946, University of Virginia
Jenkins, Edith Cooper D.C.
Jenkins, James Lewis D.C.
B.E.E. 1948, Alabama Institute of Technology
M.S. 1950, University of Florida
Jenkins, John Smith Va.
A.B. 1954, Lafayette College
Jenkins, Paul Eugene Va.
Jennings, Bette Mae Calif.
A.B. 1954, San Jose State College
Jennings, Charles Henry Va.
B.S. 1953, Virginia Polytechnic Institute
Jennings, Charles Henry III Va.
A.B. 1951, University of Pittsburgh
M.S. 1952, University of Denver
Jennings, Curtis Arthur Ariz.
A.B. 1956, University of Arizona
Jennings, Edward Harrington D.C.
Jennings, James Edwin D.C.
Jennings, John Howard Mo.
A.B. 1957, Central College
Jennings, Joyce Harvey Ill.
Jennings, Neal Cameron Va.
B.S. in C.E. 1949, Iowa State College
Jennings, Pauline R. Md.
A.B. 1942, East Tennessee State Teachers College
Jennings, Robert Lee Md.
Jennings, Stephen Lester Md.
A.B. 1955, Clark University
Jennings, Tipton Davis IV Fla.
B.S. in E.E. 1954, University of Miami
Jennings, William Harney Ill.
B.S. 1954, Duke University

Jensen, Nan Christine Va.
Jeremias, Carl Va.
Jernigan, Caul R. N.C.
Jerome, Richard Clark Md.
  A.B. 1932, Hillsdale College
  A.M. 1941, Miami University
Jesina, Alexandra Siewert Va.
Jesinkey, William James N.Y.
  B.S. 1955, Manhattan College
Jespersen, Anna S.D.
  B.S. 1924, South Dakota State College of Agriculture and Mechanic Arts
  A.M. 1933, The George Washington University
Jessel, Mary Amelia Va.
Jesaup, Pheobe Frances N.C.
Jesurun, Melrose Mendez Md.
  B.S. in E.E. 1945, M.S.E. 1948, University of Michigan
Jew, Robert D.C.
Jewell, Forrest Va.
Jewett, Robert Anthony Mass.
Jewett, Truda Cleeves D.C.
Jimenez, Maria Christina Va.
Jimenez, Myrna D.C.
Jinguji, Masaharu Gerald Wash.
  B.S. 1952, College of Puget Sound
Jirgens, Anna Va.
Jiskra, Beverly Carolyn Leta Ill.
  A.B. 1954, Vassar College
Johannesen, Eleanor Md.
John, Waldemar Md.
Johnson, Alfred Eugene, Jr. Va.
Johnson, Andrea Eve N.Y.
Johnson, Anna Winfree Miss.
Johnson, Antoinette Banks D.C.
  A.B. 1949, Howard University
Johnson, Arthur Va.
  A.B. 1935, University of Alabama
Johnson, Barbara Elaine D.C.
Johnson, Bertrand Leroy, Jr. Md.
Johnson, Betty Jane D.C.
Johnson, Bruce McCoy Ohio
  A.B. 1957, Carleton College
Johnson, Bryant Lee Va.
  B.S. in M.E. 1948, Virginia Polytechnic Institute
Johnson, Carl Richard Md.
Johnson, Charles Olof Va.
Johnson, Charles Raymond D.C.
Johnson, Charles Spurgeon Va.
Johnson, Clifford Lee, Jr. Md.
Johnson, David Ward Md.
  B.S. in C.E. 1952, Ohio Northern University
Johnson, Daniel Lynn Md.
  A.B. in Govt. 1950, The George Washington University
Johnson, Darla June Md.
Johnson, David Marion D.C.
  B.S. 1951, West Virginia State College
Johnson, David Pierce, Jr. Va.
  B.S. in M.E. 1957, Virginia Polytechnic Institute
Johnson, David William N.Y.
  B.S. 1952, Brooklyn College
Johnson, Don Robert Md.
  A.B. 1955, Princeton University
Johnson, Doris Ann D.C.
  A.B. in Govt. 1955, The George Washington University
Johnson, Douglas Richard Va.
  A.B. 1952, The George Washington University

Johnson, Drew M. S.D.
Johnson, Edward Parr, Jr. Va.
  A.B. 1953, Dartmouth College
Johnson, Edwin Joseph D.C.
Johnson, Emily Elizabeth D.C.
  B.S. 1949, Howard University
Johnson, Esther Marie Va.
Johnson, Ethel Dorothy Va.
Johnson, Eva Mayne D.C.
  A.B. 1949, A.M. 1951, The George Washington University
Johnson, George Albert Md.
  B.S. 1937, Virginia Polytechnic Institute
Johnson, Gloria Thompson D.C.
  A.B. 1949, Boston University
Johnson, Gordon Milarch D.C.
Johnson, Gordon Stanley N.Y.
Johnson, Helen Lee D.C.
  B.S. 1956, North Carolina College at Durham
Johnson, Irving Edward, Jr. Minn.
Johnson, Jack Stoddard Utah
Johnson, Janet Wildman D.C.
  A.B. 1951, A.M. 1956, The George Washington University
Johnson, Jimmie Hensley Va.
  A.B. 1936, Hardin-Simmons University
Johnson, John Andrew, Jr. Pa.
  B.S. 1954, Grove City College
Johnson, Joseph Darwin Va.
Johnson, Julia VanVliet Va.
  B.S. 1953, American Uniiversity
Johnson, Kenneth Powell Va.
  B.M.E. 1950, Syracuse University
Johnson, Kenneth Willard Va.
  A.B. 1949, Carthage College
  B.D. 1950, Chicago Lutheran Theological Seminary
Johnson, Leroy Edward D.C.
  B.S. in C.E. 1949, Howard University
Johnson, Lorraine Elma D.C.
  B.S. 1956, Howard University
Johnson, Louis R.W. Va.
  B.S. in Ed. 1936, West Virginia State College
Johnson, Lucian Leroy D.C.
Johnson, Margaret Miriam Md.
  B.S. 1942, California Technical College
  A.M. 1952, The George Washington University
Johnson, Marie Brown Md.
  B.S. 1950, Virginia State College
Johnson, Marion Meek Ala.
  A.B. 1939, LL.B. 1950, University of Alabama
Johnson, Mary Amelia D.C.
Johnson, Michael Frank Md.
Johnson, Mordecai S.C.
  A.B. 1951, South Carolina State College
Johnson, Rebecca Downer D.C.
Johnson, Rhyley Wade Md.
Johnson, Richard Ealles Ill.
  A.B. 1942, Harvard University
  A.M. 1954, Georgetown University
Johnson, Robert Alfred Ohio
  B.S. 1950, Ohio State University
  M.S. 1956, Colorado School of Mines
Johnson, Robert Bachman Pa.
Johnson, Robert Coleman D.C.
Johnson, Robert Edward, Jr. N.J.
  A.B. 1950, Amherst College
Johnson, Ronald Theodore D.C.
Johnson, Rosetta Matthews D.C.

Johnson, Ruth Anne A.B. 1951, University of Colorado	Md.
Johnson, Thomas Page A.B. 1957, The George Washington University	Va.
Johnson, Virginia Vogt A.B. 1941, Knox College	Va.
Johnson, William Edward, Jr.	Va.
Johnson, William Joseph	Pa.
Johnston, Harold William A.B. 1941, University of Washington	Wash.
Johnston, William Drumm III	D.C.
Johnston, William Harris B.S. in E.E. 1955, Georgia Institute of Technology	Va.
Johnstone, Robert Herndon	Md.
Johnstone, Thomas Carlisle	Va.
Jolin, Robert Farrington	Va.
Joliffe, Arthur Neill	Va.
Jolly, John Gilbert	Ind.
Jones, Alice Benjamin A.B. 1932, Presbyterian College	Md.
Jones, Anna Beth	Iowa
Jones, Anne Dudley	D.C.
Jones, Arthur Daniel, Jr. B.S. 1951, U. S. Naval Academy	Md.
Jones, Aubrey Bennett, Jr.	Md.
Jones, Aubrey Harrison	N.J.
Jones, Barbara, Jean B.S. 1956, D.C. Teachers College	D.C.
Jones, Carole Jean	Va.
Jones, Charles Sherfy B.S. in C.E. 1953, Duke University	Md.
Jones, Chester Glenn	Va.
Jones, Danetta Roumania B.S. 1949, D.C. Teachers College	D.C.
Jones, Dolores Elizabeth	Va.
Jones, Donald Claibourne	D.C.
Jones, Donald Leo A.B. 1956, Maryland State Teachers College	Md.
Jones, Donald Wayne	Mo.
Jones, Douglas Linwood	Va.
Jones, Edith Becker	Va.
Jones, Emmett Lee B.S. in E.E. 1952, Carnegie Institute of Technology	Md.
Jones, Estelle Agnes	D.C.
Jones, Eva M. Ed.B. 1937, University of Hawaii	Hawaii
Jones, Frank Ross A.B. (C.G.S.) 1958, The George Washington University	La.
Jones, Gael Annette	Md.
Jones, Geraldine Hooper B.S. 1952, Hampton Institute	D.C.
Jones, Guy Maclean, Jr.	Va.
Jones, Harold Ray B.S. 1948, Colorado Agricultural and Mechanical College	Wyo.
Jones, Harry Chapman III B.S. 1957, Yale University	D.C.
Jones, Helen Betchley B.S. 1932, Syracuse University A.M. 1953, The George Washington University	Va.
Jones, Helen Claettli	Md.
Jones, Helen Stewart B.S. 1936, Mary Washington College A.M. in Ed. 1950, The George Washington University	Va.
Jones, Horace Tilard, Jr.	D.C.
Jones, James Donald	Okla.
Jones, John Frederick	Pa.
Jones, John Hugh, Jr. B.S. 1949, Oregon State College	Oreg.
Jones, John Lee	Va.
Jones, John Norvill A.B. in Govt. 1956, The George Washington University	Ark.
Jones, John Paul, Jr. A.B. 1954, Carleton College	Minn.
Jones, Julie Marilyn A.B. 1956, The George Washington University	Md.
Jones, Lawrence Alan	Va.
Jones, Leonard Richard	Pa.
Jones, Linda Nan	D.C.
Jones, Loydell A.B. 1957, The George Washington University	Md.
Jones, Mary Jacquelyn	Md.
Jones, Max Edwin B.S. 1957, McNeese State College	Texas
Jones, Max Sherwood	N.C.
Jones, Merlyn Ralph B.S. 1952, Pennsylvania State Teachers College	Va.
Jones, Percy Lewis A.B. 1951, Sacramento State College	Va.
Jones, Phillip Henry	Va.
Jones, Ralph Andrew	D.C.
Jones, Reba Eleen	La.
Jones, Richard Bruce	Md.
Jones, Robert Howard A.B. in Govt. 1950, The George Washington University	Va.
Jones, Royce Earl A.B. 1955, Virginia Military Institute	Va.
Jones, Thelma Janis	D.C.
Jones, Wallace Levaun	Ohio
Jones, Walter Severn	D.C.
Jones, Warren Douglas	Va.
Jones, William Idell B.S. 1951, Hampton Institute	D.C.
Jones, William Robinson B.S. 1942, Swarthmore College	Canal Zone
Jones, Wilson Tolman A.B. 1950, University of Utah	Md.
Jonkers, Anthony Richard	D.C.
Jonkers, Loretta Mae	D.C.
Joplin, Carol Lynne	Texas
Jordan, Edward Coffin B.S. 1945, U. S. Naval Academy	Md.
Jordan, Louise	D.C.
Jordan, Mary Kahle A.B. 1953, Radcliffe College	Va.
Jordan, Milla Bell	Tenn.
Jordan, Milton B.S. 1952, Morgan State College	D.C.
Jordan, Richard Dexter A.B. 1956, American University	N.C.
Jordan, Wanda Marie	D.C.
Jorgensen, Ralph Gubler	Md.
Jorgensen, Reed Edward	Vt.
Jose, Frank Aldrich B.S. 1952, Indiana University	Ind.
Josenhans, Robert Charles	Md.
Joseph Jean Lillian	Va.
Joslyn, Danforth A.B. 1953, The George Washington University	Va.
Jovanovich, Mary Rehr A.B. 1941, Wellesley College	Md.
Joy, Lucille Athalie A.B. 1954, Newton College LL.B. 1957, Fordham University	N.Y.

Joyce, James Gerard B.M.E. 1957, Villanova University	N.Y.
Joyce, James Wallace, Jr.	D.C.
Joyce, Jeanne Margaret	D.C.
Joyce, John Donald	Md.
Joyce, Thomas Joseph B.B.A. 1956, Iona College	N.Y.
Joye, Kenneth Edward	Va.
Joynt, May Lepley A.B. 1929, A.M. 1930, The George Washington University	Va.
Judd, Evan Vernel B.S. 1956, Brigham Young University	Utah
Judge, John Cullen B.S. 1954, Union College	N.Y.
Judge, Robert William B.E. 1953, Yale University	Va.
Judge, Stephen Ralph A.B. 1957, The George Washington University	N.Y.
Judkins, Lawrence Wyatt, Jr.	D.C.
Judy, Betty Jean	Va.
Judy, William Raines B.S. in B.A. 1953, Fairmont State College	W.Va.
Juge, Peter E. A.B. 1956, Louisiana State University	Va.
Juhasz, Andrew Richard B.S. in M.E. 1949, University of Buffalo	Md.
Juhn, Daniel Sungil	Korea
Julian, Archie Leyton B.S. 1942, U.S. Naval Academy	Va.
Julian, Otis Kenneth A.B. 1937, Friends University	D.C.
Jullien, Philip Morrison	Va.
Jumper, Sally Anne A.B. 1936, Connecticut College	D.C.
Justin, A. Christine B.S. 1939, Texas State College for Women	Texas
Juten, Helen Jeannette	Md.
Jwaideh, Patricia Jane	D.C.

K

Kaarid, Heldur	Md.
Kabes, Vladimir M. Dr.Jur. 1945, Charles University, Prague	Va.
Kabourek, Martha Marie	D.C.
Kabrich, Delmar, Jr. A.B. in Govt. 1955, The George Washington University	Va.
Kachmar, Michael, Jr.	D.C.
Kadala, Kenneth Irving	D.C.
Kadel, Sue Romayne	Pa.
Kafafy, Samira A.B. 1957, Alabama College	Egypt
Kagan, Miriam B. A.B. 1936, Hunter College	D.C.
Kahn, Barry	Fla.
Kahn, Daniel Lyon A.B. 1954, University of Miami	Fla.
Kahn, Douglas Allen A.B. 1955, University of North Carolina	N.C.
Kahn, Jacquin	N.Y.
Kahn, Melville Joseph A.B. 1947, College of William and Mary A.M. 1951, Harvard University	Va.
Kahn, Stuart A.B. 1957, Indiana University	N.J.
Kain, Joseph B.E. in Ind.Eng. 1949, B.S. in E.E. 1954, Johns Hopkins University	D.C.
Kaiser, Joan	D.C.
Kaiser, Stuart Berwin A.B. 1918, Harvard University	D.C.
Kalandros, Basil Louis	D.C.
Kalbach, George William	Va.
Kalbaugh, Jack Charles B.S. 1951, Maryland State Teachers College, Frostburg	Md.
Kalcheff, Ignat Vassileff	Va.
Kaldenbach, Robert Joyce A.B. 1955, College of William and Mary	Va.
Kalish, Robert Paul A.B. in Govt. 1955, The George Washington University	D.C.
Kalla, Takieddine Said	Israel
Kallis, Patricia John	Md.
Kalnins, Karlis Vilis Diploma in Law 1934, University of Latvia	Latvia
Kambouris, George Nick B.S. in E.E. 1949, West Virginia University	Md.
Kamel, Ahmed Mohamed B. in Law 1954, Ein Shams Law University, Egypt	Egypt
Kaminetzky, Jerry	D.C.
Kamkar-Parsi, Mansoor Diploma of Civil Engineering 1948, National School of Bridges and Roads, France	Iran
Kammen, Michael G.	D.C.
Kandlbinder, James Allen	Va.
Kane, Eloise Frances B.S. 1952, D.C. Teachers College A.M. in Ed. 1956, The George Washington University	Iowa
Kane, John Francis	Md.
Kane, Lois B. A.B. 1941, Brooklyn College	Va.
Kane, Nancy Ann	D.C.
Kane, Robert Reveley	Va.
Kane, Thomas John A.B. 1949, Cornell University	N.Y.
Kaner, Richard Glenn B.Arch.Eng. 1957, Catholic University of America	Md.
Kanesathhasan, Sarajanamuttu A.B. 1950, University of Ceylon	Ceylon
Kanfer, Julian Norman B.S. 1954, Brooklyn College	Md.
Kang, Sugwon	Korea
Kannee, Bruce Neal A.B. 1957, The George Washington University	D.C.
Kapitan, Frank James, Jr.	Va.
Kaplan, Burton Harvey	Mass.
Kaplan, Charles Marvin B.S. 1953, Massachusetts Institute of Technology	Texas
Kaplan, Doria E. A.B. 1955, University of Louisville	Ky.
Kaplan, Eugene A.B. 1949, University of Buffalo LL.B. 1956, Cornell University	N.Y.
Kaplan, George	D.C.
Kaplan, Harry A.B. 1948, A.M. 1952, The George Washington University	Ill.
Kaplan, Joan Ellen	D.C.
Kaplan, Marlene	Va.
Kaplan, Stuart Lee	D.C.
Kapsianos, William George	D.C.

Kapur, Krishan A.B. 1944, A.M. 1946, Punjab University, Pakistan	India
Kaputa, Edward Joseph B.E.E. 1955, New York University	D.C.
Kar, Edward George	Ohio
Karacalarli, Seciye A.B. 1943, Istanbul American College for Girls	Turkey
Karas, Patricia Ann	Pa.
Karasik, Stanley Edward A.B. 1957, The George Washington University	D.C.
Karaska, Gerald James B.S. 1954, Pennsylvania State University	Va.
Karczewska, Eleanora	D.C.
Karczewski, Zygmunt	D.C.
Karlins, Aija Biruta	Md.
Karl, William Clement B.S. in M.E. 1931, University of Notre Dame A.M. 1934, New York University	D.C.
Karlson George Edward	Va.
Karmazin, Charlotte Norma	D.C.
Karnezis, Dimitrios E.E. 1956, University of Miami	Fla.
Karousatos, Fotis Nicholas A.B. in Govt. 1953, The George Washington University	Md.
Karp, Arnold Lewis A.B. 1954, University of Maryland	Md.
Karp, Jeanette A.B. 1951, The George Washington University	D.C.
Karpenko, Vadim A. B.S.E. 1956, University of California at Los Angeles	Va.
Karras, Min A.B. 1954, Bowling Green State University	D.C.
Karstedt, Anne West A.B. 1944, Millsaps College	Miss.
Karstens, Ruth Flora	Va.
Kartalis, Andrew B.S. in C.E. 1954, Pennsylvania State University	Pa.
Kartalos, Pauline A.B. 1947, University of Vermont A.M. 1956, The George Washington University	Mass.
Karwoski, Celia B.S. in Ed. 1942, College of the City of New York	Md.
Karter, Anthony Joseph, Jr.	Va.
Kase, Francis Joseph LL.D. 1934, Charles University, Czechoslovakia A.M. 1935, Free School of Political Science, Czechoslovakia	D.C.
Kashiwa, Herbert Koro B.S. 1950, University of Hawaii M.S. 1954, The George Washington University	Hawaii
Kass, Martin Bernard	D.C.
Kassel, Simon	Va.
Kast, Darrell Dee A.B. 1954, West Virginia University	W.Va.
Kastanek, Michael Thomas A.B. 1956, The George Washington University	Md.
Kasun, Nicholas Joseph, Jr. A.B. 1948, Wayne University	Va.
Kater, Donald	D.C.
Katherman, Walter Higgins, Jr. A.B. 1948, College of William and Mary LL.B. 1951, Dickinson College	Pa.
Katz, Benjamin B.S. 1926, U. S. Naval Academy	Mass.
Katz, Blaine Kenneth	Mich.
Katz, Letty	Md.
Katz, Martin Howard B.S. 1954, Seton Hall University	N.J.
Katz, Robert	Md.
Katzen, Howard Marvin B.S. 1956, Johns Hopkins University	Md.
Katzenstein, William	Va.
Katzin, Joel Carl	Md.
Kauffmann, Olivia Lustosa	D.C.
Kaufman, Barry Melvyn	N.Y.
Kaufman, Richard Miles A.B. 1955, The George Washington University	Md.
Kay, Alan A.B. 1957, The George Washington University	Va.
Kayaloff, Nadya Austina	D.C.
Kaye, Harvey B.S. in T.E. 1956, Lowell Institute of Technology	Va.
Kaye, Robert Adolph A.B. in Govt. 1948, A.M. in Govt. 1950, The George Washington University	N.D.
Kaye, Robert McKenzie	Va.
Kaylor, Donald William	D.C.
Kazar, John Dryden, Jr. A.B. 1950, Tufts University	Mass.
Kazen, Stanley Paul	Va.
Kazlow, Kay Joan	Pa.
Kazmierczak, Gerald Benjamin A.B. 1955, Wayne State University	Va.
Keach, Thomas Carroll A.B. 1935, West Kentucky Teachers College	Va.
Keadle, William Dexter	W.Va.
Keagle, Azor Loman	D.C.
Kearney, Carolyn Elizabeth A.B. 1953, Centre College of Kentucky	Tenn.
Kearney, Denis Burkhard	N.Y.
Kearney, Edward Francis LL.B. 1957, Georgetown University	D.C.
Kearney, Mary Williams	Md.
Keasbey, Doramay	D.C.
Keating, John Lawrence A.B. 1953, Boston College	Md.
Keaton, Bill Don	D.C.
Keaton, Charlton Ross	Va.
Keck, Edwin William B.S. in Ed. 1948, Temple University A.M. in Ed. 1953, The George Washington University	Pa.
Keck, Wilbur Howard	Pa.
Kecskemethy, Joseph Geza A.B. 1956, University of Pittsburgh	D.C.
Keefe, Lawrence Aloysius	Va.
Keefe, Robert Francis B.S. in C.E. 1954, Tufts University	D.C.
Keefe, Robert Michael A.B. 1953, University of Maryland	Md.
Keefer, Dolores Elizabeth	Md.
Keefer, Frank Jay A.B. 1957, Washington and Jefferson College	W.Va.
Keefer, Irvin Joseph	Md.
Keeffe, Stephen Daniel	D.C.

Keehn, Wayne McKenzie A.B. 1954, Albion College	Mich.
Keeling, Cynthia Blondinia B.S. 1953, D.C. Teachers College	D.C.
Keels, Michael Dominique	Va.
Keen, John Paul	Va.
Keenan, William Francis	Va.
Keener, Carl Lee B.S. 1957, Eastern Mennonite College	Pa.
Keeton, Ann Jackson	Md.
Kehoe, John David	Md.
Kehoe, Lawrence Thomas	Md.
Keilin, Joseph Edward	D.C.
Keire, Fred Aivars B.S. in Ch.E. 1957, University of Washington	Wash.
Keiser, Clarence Cyrus, Jr. A.B. 1954, University of the South	Md.
Keiser, Theodore Roy A.B. 1956, Catholic University of America	Fla.
Keith, Allis Ashton A.B. 1946, University of Kansas City M.S. 1948, Kansas State College	Va.
Keith, James	Va.
Keith, Robert Milton	Va.
Keleher, Claire Gerard	D.C.
Kelemen, Gabor Joseph	D.C.
Keller, Dorothy Dippold	Pa.
Keller, Harry Bradley B.S. 1942, U. S. Naval Academy Nav. Eng. 1949, Massachusetts Institute of Technology	Va.
Keller, June Trow	D.C.
Keller, Myrtle Elizabeth B.S. 1957, Briar Cliff College	Iowa
Kelley, Elma Kuchar A.B. 1942, College of Notre Dame of Maryland	Md.
Kelley, John Bernard B.S. 1956, University of Maryland	Mass.
Kelley, John Ogden	D.C.
Kelley, Maria Helen A.B. 1921, Indiana University	Va.
Kelley, Severance Burrage A.B. 1956, Ohio University	W.Va.
Kelliher, Patrick Cornelius	Va.
Kellogg, John Forbes B.S. in E.E. 1952, University of Miami	Md.
Kelly, Anna Brooke A.B. 1957, Maryville College	Md.
Kelly, Bernard Eugene A.B. 1951, Western Maryland College	Md.
Kelly, Elizabeth Cecelia	Pa.
Kelly, James Dillard B.B.A., M.B.A. 1952, University of Michigan	Mich.
Kelly, James Edward	D.C.
Kelly, James Philip	Va.
Kelly, John Davidson A.B. 1953, Carroll College	D.C.
Kelly, John Edward	N.Y.
Kelly, John Joseph, Jr. B.S. 1951, Loyola College	Md.
Kelly, John Luke B.S. in E.E. 1956, Massachusetts Institute of Technology	D.C.
Kelly, Mary Catherine	Md.
Kelly, Raymond Edward	Va.
Kelly, Robert Charles	Va.
Kelly, Robert Daniel B.S. 1951, Virginia Polytechnic Institute	Va.
Kelly, Robert John A.B. 1952, University of Missouri	Mont.
Kelly, Robert Stanley B.S. 1956, Oregon State College	Calif.
Kelly, Thomas J.	Md.
Kelman, Nathan Allen Phar.G. 1932, B.S. 1945, University Maryland	D.C.
Kelsall, Ann Nottingham A.B. 1955, Cedar Crest College	D.C.
Kelsall, Thomas B.S. 1955, Muhlenberg College	D.C.
Kelsey, Ben Scoville	Va.
Kelsey, David A.B. 1942, University of Rochester	Va.
Kelso, Jack Robert B.S.E. 1947, M.S.E. 1949, University of Michigan	Md.
Kelso, William Robert B.S. in M.E. 1949, State University of Iowa	Iowa
Kemmel, William Anthony, Jr. B.S. 1952, M.S. 1953, California Institute of Technology	D.C.
Kemp, Charles William B.B.A. 1951, Upsala College	Va.
Kemp, James Furman A.B. 1955, University of Utah	Utah
Kemp, Joseph Clifton, Jr. B.S. 1942, U. S. Naval Academy	Va.
Kemp, Karl Richard	Md.
Kemp, Robert Martin B.S. 1955, University of Maryland	Va.
Kemp, Stephen Barrett	Ind.
Kemp, William Franklin B.B.A. 1954, University of Texas	Texas
Kempton, James Stephen	Ohio
Kendall, Arthur James	Mass.
Kendall, Clifford Manford B.S. 1954, University of Maryland	Md.
Kendall, Marie Josephine A.B. 1945, University of British Columbia	Canada
Kendall, Richard William	Utah
Kendall, Stuart Oscar	Oreg.
Kendrick, Meade Hammond	Va.
Kenerson, Lamar L.	D.C.
Kenly, Bertha Welsch	Md.
Kennedy, Adele Marie A.B. 1945, University of Tennessee	Tenn.
Kennedy, Arthur Joseph, Jr. A.B. 1952, St. Anselm's College	Md.
Kennedy, Joseph Winston B.S. 1954, McPherson College	Iowa
Kennedy Patrick Ernest	Iowa
Kennedy, Philip Dale	Va.
Kennedy, Robert Spayde B.S. in E.E. 1955, University of Kansas	Va.
Kennelly, Cletus Wright II B.S. 1945, U. S. Naval Academy	Mich.
Kenney, Arthur Leslie A.B. 1954, New York University	Md.
Kenney, Helen Marie	Md.
Kenney, Jane Anne	Md.
Kennington, Charles Robert, Jr. B.S. 1949, Kent State University	Ohio
Kenny, Malbourne Fletcher	Va.
Kent, Charles Harry	Va.
Kent, Ila Meyer	D.C.
Kenyon, James Pierre Goullet	D.C.
Kenyon, Randall Charles	Va.
Kephart, Stanley Holmes	Md.

Kepler, Elizabeth Martin A.B. 1940, College of Wooster	Va.
Kepner, William Clayton	Ind.
Kerbel, Leo John	Va.
Kerby, Carey Columbus, Jr.	W.Va.
Keriakos, Van Angello A.B. in Govt. 1956, The George Washington University	D.C.
Kerin, Leo	Ill.
Kern, Anthony Mark	Md.
Kern, Jerome B.S. 1950, Brooklyn College M.S. 1953, Ohio State University	Md.
Kern, Kate Condit A.B. 1936, Pomona College	Md.
Kern, Richard Norbert B.S. 1949, Rockhurst College M.S. 1951, St. Louis University	Md.
Kern, Tempie Christine	D.C.
Kernus, Barry Neil	Md.
Kerper, Matthew Julius B.S. 1943, M.S. 1947, University of Missouri	D.C.
Kerr, David Renwick A.B. 1914, Columbia University A.M. 1952, The George Washington University	Va.
Kerr, George Robert, Jr.	Va.
Kerr, Gertrude Wilkens B.S. 1955, Lynchburg College	Va.
Kerr, Jean Louth, Jr. B.B.A. 1954, University of Pittsburgh	Ind.
Kerr, Nelson Reed A.B. 1955, Shimer College	Md.
Kerr, Oliver Wendell	Nebr.
Kersey, Carole Scott	Va.
Kersey, Joseph Alvan B.E.E. 1950, Georgia Institute of Technology	Va.
Kertzman, Ilana	Md.
Kertzman, Jean	Md.
Kerwin, Timothy Daniel B.S. 1950, Randolph-Macon College	Md.
Kesler, Sadie Shank	Va.
Kesock, Jack Edward	Pa.
Kessler, Dan Peck	D.C.
Kessler, Helen Jeanette B.A.E. 1955, University of Florida	Fla.
Kessler, Henry Alexander	D.C.
Kessler, Isadore	Md.
Kesten, Sanford Miller A.B. 1957, University of Michigan	Mich.
Ketcham, John Tyden	D.C.
Ketel, Jenny Margaretha	Md.
Kettleman, John Effingham	Va.
Keval, Lawrence Eugene	D.C.
Key, Bertha Williams B.S. 1947, Ohio University A.M. 1951, New York University	Md.
Keyes, Wendell Lewis B.S. 1951, Virginia Polytechnic Institute	Va.
Keys, Lawrence Wesley	Va.
Khan, Josephine Gerber	Md.
Khan, Mohammad Salin A.B. 1947, University of Punjab, Pakistan	Pakistan
Khan, Mohammed Fazall	D.C.
Khanna, Vijay Kumar	India
Khatcheressian, Norayr	Lebanon
Khosrovi, Carol Mayer	Va.
Kiah, Donald Allen A.B. 1951, Howard University	D.C.
Kiaie, Ala T. A.B. 1952, San Francisco State College	Iran
Kicklighter, Reginald C. B.S. 1938, M.S. 1939, University of Georgia	D.C.
Kidd, Edward Stanley, Jr.	Va.
Kiehle, George Austin	Va.
Kiely, JoAnne Marie A.B. 1956, Albertus Magnus College	Conn.
Kiely, Joseph Phillip A.B. 1950, Tufts University	Md.
Kiepe, Werner Widtsoe B.S. 1955, University of Utah	Utah
Kierce, Robert Richard B.S. 1950, Bucknell University	Va.
Kigin, John Richard A.B. 1957, Indiana State Teachers College	D.C.
Kilby, Catherine LaVerne	D.C.
Kilby, H. A., Jr. B.S. 1957, Louisiana State University	D.C.
Kiley, James Edward	Calif.
Kilgore, Harold Louis B.S. 1943, Southwestern Louisiana Institute	Va.
Kilgore, Lois Lilly	D.C.
Kilgore, Robert Martin B.S. 1947, Georgetown University LL.B. 1952, The George Washington University	D.C.
Kilic, Asuman	Turkey
Killeen, James Edward	D.C.
Killen, Richard Beaman, Jr. A.B. 1955, Duke University	Fla.
Killette, Jim Rush	Fla.
Killian, John Douglas	N.Y.
Killoran, Mary Elizabeth	Fla.
Kilpatrick, Dorothy Jane	Ga.
Kilpatrick, Thomas Hare	D.C.
Kim, Chong Hoon	Korea
Kim, Chong Rok	Korea
Kim, Ellen Sohyang	Korea
Kim, J. Junchul A.B. 1953, LL.B. 1956, Seoul National University, Korea	Korea
Kim, Kyoung Woun	Korea
Kim, Mary Hyunsook	Korea
Kim, Myung-Soo B.S., M.S. 1951, University of Michigan	Korea
Kim, Rosalie	Md.
Kim, Sang Yup	Korea
Kim, Suk Joo A.B. 1955, Seoul National University, Korea	Korea
Kimball, Frank Bennett A.B. 1957, Yale University	Va.
Kimber, Lesly Howard	N.C.
Kimble, Joyce	Md.
Kimel, Howard Fred	Minn.
Kimel, Susan Schwarz	D.C.
Kimura, Yukiko	Japan
Kincaid, Robert Alexander B.S. 1938, Hampden-Sydney College LL.B. 1954, The George Washington University	W.Va.
Kincaid, William Gayle A.B. 1940, Glenville State Teachers College A.M. 1948, West Virginia University	Md.
Kincheloe, Shirley Ann	D.C.
Kinder, Robert Samuel Lufbery A.B. 1951, Brown University	R.I.

King, Algernon Sidney Va.
King, Anthony Speaker Conn.
A.B. 1953, Williams College
King, Charles Eulle, Jr. Va.
A.B. 1948, Lynchburg College
M.E. 1952, University of Virginia
King, Charles Wesley D.C.
A.B. 1957, Washington and Lee University
King, Clifford Walker D.C.
A.B. 1951, University of Georgia
King, Eleanor E. W.Va.
King, Ernest Lee D.C.
King, Frank Marshall Va.
B.E.E. 1949, Georgia Institute of Technology
King, George William Va.
B.S. in E.M. 1957, West Virginia University
King, Gertrude D.C.
King, Harriet S. Va.
King, Joan Story Va.
King, John Healan, Jr. Va.
King, John Morrison Md.
A.B. 1929, Central College
A.M. 1935, University of Oklahoma
King, Joseph Lee Ala.
A.B. in Ed. 1956, The George Washington University
King, Leon Herbert Va.
B.E.E. 1955, The George Washington University
King, Louis Nathaniel Calif.
B.S. 1940, U. S. Naval Academy
King, Marcia Gygli D.C.
A.B. 1953, Smith College
King, Myron Pa.
King, Robert Edgar, Jr. Md.
A.B. 1947, West Virginia University
A.M. 1948, New York University
King, Rollin W. D.C.
A.B. 1955, Western Reserve University
King, Sharon Louise Va.
A.B. 1954, Mt. Holyoke College
LL.B. 1957, Valparaiso Technical Institute
King, William Houston Ky.
B.S. in E.E. 1950, University of Kentucky
King, William M. Pa.
B.S. 1952, University of Michigan
King, William Robert Va.
King, X. Christine D.C.
Kingman, Howard Irvin, Jr. Md.
Kinnahan, James Aloysius D.C.
Kinnamon, Carlotta Anne D.C.
Kinnare, Alice Elizabeth Ill.
Kinnear, George Espey Ridgeway II Fla.
A.B. (C.G.S.) 1957, The George Washington University
Kinnemann, Susan Va.
Kinney, Edward Thomas Va.
B.S. 1952, Michigan State University
Kinney, Francis John Md.
Kinney, H. Drue Va.
A.B. 1947, Pennsylvania State University
Kinsella, Richard Conn.
B.S. in F.S. 1955, Georgetown University
Kinsman, Richard Louis Va.
B.S. 1951, Ursinus College
Kintsfather, David Peter Va.
B.C.E. 1951, The George Washington University

Kinyon, Robert Taylor Va.
B.S. in E.E. 1952, Iowa State College
Kinzer, Hildred Elizabeth Va.
B.S. 1945, Concord College
Kiorpes, Alexander Anthony Md.
B.S. in F.S. 1953, Georgetown University
Kioseff, Donald Dohme Wis.
B.S. in M.E. 1957, University of Wisconsin
Kiracofe, Mary Patricia Md.
Kirby, James Robert, Jr. D.C.
B.S. in Ed. 1953, D.C. Teachers College
Kirby, Patricia Wehr Va.
Kirchman, Blanche Elizabeth Md.
Kirkbride, Virginia Randolph Nebr.
B.S. 1941, A.M. 1942, University of Nebraska
Kirkell, Harvey Dietrich Ohio
Kirker, Clarence Archibald, Jr. Md.
Kirkland, Robert Carey Va.
Kirley, Peter Herbert Md.
Kirsch, Marcia Suzanne D.C.
Kirsch, Robert Norton Md.
B.S. 1953, University of Maryland
Kirschenbaum, Anne Marie D.C.
Kirschner, Marion D.C.
Kirwin, James Joseph III Md.
Kissell, William G. Va.
B.S. 1955, University of Maryland
Kissin, Sidney Va.
B.S. 1951, Brooklyn College
A.M. 1953, University of Massachusetts
Kitagawa, Kay Ichi Va.
A.B. 1947, Stanford University
A.M. 1949, University of Michigan
Kitamura, Henry Nobuaki Hawaii
B.B.A. 1952, University of Hawaii
Kitchen, Enos Joseph Va.
Kite, Margaret C. N.J.
A.B. 1951, Seton Hill College
Kitsoulis, Michael Thomas D.C.
A.B. in Govt. 1953, The George Washington University
Kitt, William Henry Pa.
Kitzmiller, Howard Lawrence Pa.
A.B. 1951, LL.B. 1954, Dickinson College
Kjeldahl, Bill O. Minn.
A.B. 1952, University of Minnesota
Klaas, Bruce Gregory Va.
B.S. in M.E., B.S. in Bus.Mgmt. 1956, University of Colorado
Klaif, Charles Howard N.Y.
A.B. 1954, Syracuse University
Klapps, Pete Patrick Pa.
B.S. 1950, University of Scranton
Klassen, Harvey James D.C.
Klatsky, Alan Usher N.Y.
A.B. 1955, Yale University
Klatt, Charles Arthur D.C.
B.S. 1954, Johns Hopkins University
Klauber, Stefan Jay Md.
A.B. 1955, Cornell University
Klavan, Hillel D.C.
B.S. 1947, Johns Hopkins University
Kleeman, Werner Warren N.Y.
B.S. in M.E. 1956, University of Michigan
Klein, Arlene A. Md.
A.B. 1955, New York University
Klein, Charles Nicholas Va.

Klein, Ernest Joseph	D.C.
Klein, Herbert Edward	Md.
A.B. 1955, Columbia University	
Klein, John Francis	D.C.
B.S. 1957, Georgetown University	
Klein, Lawrence	D.C.
Klein, Morris	Va.
B.S. 1951, M.S. 1956, The George Washington University	
Kleinstuber, John Francis	Md.
Kleizo, Julius Mathew	N.Y.
Klenk, Eugene Leslie	D.C.
A.B. 1952, Dartmouth College	
Kline, Edward Samuel	Va.
A.B. 1948, University of Pennsylvania	
M.S. 1955, The George Washington University	
Kline, James Frederick	Md.
B.S. in P.E. 1951, The George Washington University	
Kline, Richard Gruver	Md.
A.B. 1952, Harvard University	
Kline, Robert Milton	Md.
Klinenberg, James Robert	Md.
A.B., A.M. 1955, Johns Hopkins University	
Klinge, John Kenneth	Va.
Klinger, Larry Dale	Pa.
A.B. 1953, Franklin and Marshall College	
Klippel, Randolph	N.Y.
B.S. 1938, U. S. Naval Academy	
Klipsch, Mary Helen	Ind.
Klonowski, Bernard Peter	Va.
Klooz, Marie Stuart	D.C.
A.B. 1923, Sweet Briar College	
A.M. 1939, Columbia University	
Klopper, Frederick Herman	Md.
Kmen, Mary Ann	N.Y.
Kmosena, Edward A.	Ill.
B.S. in E.E. 1956, Northwestern University	
Knapp, Lois Estelle	D.C.
B.S. 1957, Gustavus Adolphus College	
Knauer, Dolores Marie	Pa.
Knee, Roma Diane	Va.
A.B. 1956, The George Washington University	
Knezevich, Ljubica	D.C.
Knie, Richard Erwin	Conn.
Knight, Chester Raymond	Va.
B.S. 1940, University of Utah	
Knight, Donna Falke	Texas
A.B. 1956, Mississippi Southern College	
Knight, Francis Makenzie	Fla.
Knight, Leland Quinn	D.C.
Knights, Helen Elizabeth	Va.
Knipling, Edwina Hall	Va.
Knisley, Sam Ralph	Md.
Knispel, Ruth A.	D.C.
Knoll, Doris	D.C.
Knoll, Erwin	D.C.
A.B. 1953, New York University	
Knoll, Leo Xavier	D.C.
Knoppe, Mary Frances	Ark.
Knorr, Norman John	Md.
Knost, Keith Hugh	Mo.
Knott, Aaron Ira	N.Y.
Knott, Irene Olson	D.C.
A.B. 1950, D.C. Teachers College	
Knott, Phyllis King	D.C.
A.B. in Ed. 1915, A.M. in Ed. 1943, The George Washington University	
Knowles, Elizabeth Sealy	Va.
Knowles, Robert Clinton	D.C.
Knowlton, David Almy	Md.
Knudson, Lester Ricks	Utah
Koberg, Phyllis Ann	Va.
Kobiashvili, Maiko	Va.
Kobs, Jayna Huffman	Va.
Koch, James Gary	Va.
Koch, Jeanette Adeline	Mich.
Koch, Naomi Violetta	Va.
Koch, Ulrich Hugh	Mich.
B.S. 1955, Webb Institute of Naval Architecture	
Koch, Werner	D.C.
Kochoff, Arthur	Mich.
Kocourek, Dan	D.C.
Kodrowski, Dorothy Elizabeth	Pa.
Koegel, Robert Joseph	D.C.
Koegler, Dorothy Helen	D.C.
A.B. 1956, The George Washington University	
Koehler, Dorothy Virginia	D.C.
Koehler, Karin Ursula	D.C.
Koehler, Milford Andrew	Va.
B.S. 1927, Princeton University	
Koehler, Peter F. M.	D.C.
Koehler, Ruth	Va.
A.B. 1927, Beloit College	
Koellner, John Henry	Va.
B.S. 1953, New York University	
Koenig, Sebastian Bernard	Calif.
Koerfer, Ronald Louis	Ind.
Koernig, Robert Walter	Pa.
B.S. 1954, University of Maryland	
Koester, Karlota Marie	D.C.
Koeze, Thomas Henry	Mich.
Kogok, Robert Anthony	D.C.
Kogon, Maurice	Md.
Kohl, Donald Phillip	Va.
A.B. 1955, Ohio State University	
Kohl, Francis Victor	Va.
B.S. 1949, The George Washington University	
Kohler, Robert Leslie	D.C.
Kohn, Joanne Jacobs	Mo.
A.B. 1955, Washington University	
Kohr, Daniel Allen	D.C.
Koidan, Ruth Doris	D.C.
A.B. 1954, The George Washington University	
Koiner, Verna Gene	D.C.
Koivula, Maaret	D.C.
Kolavo, Francis James	Ill.
Kolb, William Makepiece	Va.
Kolac, Gerald Albert	Md.
Koll, Andrew James, Jr.	Md.
Kolodny, Howard	Md.
Komenda, Frank Joseph	D.C.
Komons, Nick Alexander	W.Va.
A.B. 1951, Marshall College	
A.M. 1955, The George Washington University	
Kondo, Peter Hajime	D.C.
B.S. 1957, Michigan State University	
Koneczny, Conrad Edmund	Va.
Konia, Charles	N.Y.
A.B. 1955, New York University	
Konstan, David	N.Y.
Koock, Ken Louis	Texas
Koolbeck, Dean Franklin Weldner	D.C.
Koons, David Anthony	D.C.
Koontz, Hilda Elizabeth	Va.
A.B. 1935, Lynchburg College	
Koontz, Nancy Jean	D.C.
Kopacka, Lorraine Mae	Ohio

Kopeck, John Thomas Md.
Kopf, Alfred Carl Hermann Va.
Koplin, Mimi Ellen D.C.
Kopp, Robert Md.
A.B. 1940, Brooklyn College
B.E.E. 1948, The George Washington University
Koppel, Mona Leah Va.
Kopsidas, Apostolos Nicholas D.C.
Kopsidas, Charilaos Konstantinos D.C.
Kopulos, Nicholas Charles D.C.
Kordack, Vincent A. Md.
A.B. 1950, West Liberty State Teachers College
Kordell, Edward V. Md.
Korfonta, Stephen Albert Va.
B.S. 1951, Georgetown University
Korkolis, Anthony Constantine D.C.
Korn, Charles William Va.
B.S. in C.E. 1954, University of South Coralina
Korn, Eugene Jerrell D.C.
Korn, Milton D.C.
Kornberg, Jacques N.Y.
A.B. 1955, Brandeis University
Kornfeld, Leonard D.C.
A.B. 1941, Texas Western College
Kornfield, Judy Blossom D.C.
Kornhauser, Louis H. Md.
B.S. in Ed. 1942, D.C. Teachers College
A.M. in B.A. 1947, Columbia University
Korp, Alvada Parks Ill.
Kortie, Dwight Jackson D.C.
Kosberg, Shirley Ann D.C.
Koschny, William Simon Va.
B.S. 1949, Northeastern University
Kosek, Daniel Thomas Va.
Kosisky, Emma M. D.C.
Koski, Irma Rachel Mich.
Koski, Raymond James Va.
Kosro, Jerry D.C.
B.C.E. 1947, College of the City of New York
Kossow, Goldie Falk Md.
Kostantas, Nikolaos Janulis Va.
Kostas, Evans Ill.
Kostelecky, Donald Joseph D.C.
Kostyaldet, Eva Magdolna Md.
Kotapish, William Robert Mich.
A.B. 1950, A.M. 1951, University of Michigan
Koto, Yukie Hawaii
A.B. 1952, Univeristy of Hawaii
Kotwas, William Emil Md.
Kotzin, Joanna Lee D.C.
Koubele, Bessie Rita D.C.
Koury, Enver Mousa D.C.
A.B. in Govt. 1953, The George Washington University
Kousen, Morton Md.
Koustenis, Gust George D.C.
B.S. in Phar. 1955, The George Washington University
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Koutras, Demetre Anest D.C.
Koutras, George Anest D.C.
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Koutsandreas, Peter Dionysius Va.
B.C.E. 1948, LL.B. 1952, The George Washington University

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B.E.E. 1956, Cooper Union
Kowalczyk, Chester Harry Pa.
B.S. in E.M. 1956, West Virginia University
Kowalik, Czeslawa Ewa D.C.
Koyen, Carol Patricia N.J.
Kozak, Judy Ellen Md.
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Krajick, John Joseph D.C.
Krakes, Gloria Boom D.C.
A.B. 1953, The George Washington University
Kramer, Manuel Louis Md.
Kramer, Oscar Milton D.C.
Kramer, Robert Va.
Kransdorf, Ronald Joseph D.C.
Krantz, Marvin Jerome D.C.
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B.S. 1943, A.M. 1944, Columbia University
Ph.D. 1954, University of Vienna
Kratochvil, Otto La.
LL.B. 1950, Louisiana State University
Kraus, Ellen Elizabeth D.C.
Kraus, Frederick Joseph Md.
Kraus, John Templeton Pa.
Kraus, Russell Warren Md.
B.E.E. 1950, Clarkson College of Technology
Krause, Arnold James Mich.
B.S. in E.E. 1955, Michigan State University
Krauss, Frieda Joy Beck Va.
Kraut, Joseph William Ill.
B.S.S. 1954, Georgetown University
Krawczewicz, Stanley Thomas Pa.
B.S. 1957, University of Pittsburgh
Krebser, Werner Va.
Kreh, Louis Victor, Jr. Md.
Kreisa, Lester Claude Va.
Kreiter, Barbara Butz Md.
B.S. 1953, D.C. Teachers College
Krell, Carolyn Ruth Md.
A.B. 1957, College of Notre Dame of Maryland
Krell, Joye Elverta S.C.
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B.S.E. 1934, College of the City of New York
Kreppein, Herbert John Va.
Krick, Bernard Frederick, Jr. N.J.
B.S. 1956, Albright College
Krick, Warren Jerome D.C.
Krieger, George Joseph, Jr. Fla.
Krieghoff, Claudio Md.
Krier, Robert Arthur N.Y.
B.S. in F.S. 1956, Georgetown University
Krikorian, George Krekor Md.
B.S. in M.E. 1957, University of Rhode Island
Krikorian, Isskouie Danielle France
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B.S. 1955, University of Agra, India
Kristiansen, Henning D.C.
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Krivickas, Ruta Marija D.C.
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B.S. in Ch.E. 1948, University of Texas

Krochmal, Arlene Sheila Md.
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A.B. 1956, Southern Methodist University
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Krohe, William David Ohio
A.B. 1953, Western Reserve University
Krohn, Donald Eugene Oreg.
Krohn, Jose Antonio Md.
Krokus, Thomas Richard N.Y.
Kroll, Sarah Jane Md.
Kromer, George W. Md.
Kropczynski, Norman Andrew Pa.
Kropp, David Arthur Ill.
B.S. 1956, Illinois Institute of Technology
Krossner, William John, Jr. Va.
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Krucelyak, Elizabeth Marie Pa.
Kruchten, Rebecca Gettens D.C.
Krueger, Donald Allan Minn.
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B.S. 1952, University of Wisconsin
Krug, Diana Joyce D.C.
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B.S. in M.E. 1956, Lafayette College
Krul, Peter D.C.
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Krupinski, Ronald Louis Pa.
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Kubani, Thomas Leo Mich.
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Kube, George Frank Wis.
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Kubilius, Alphonse Anton Va.
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Kuchinsky, Victoria N.J.
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Kuendel, Horst Joseph Md.
Kuhl, Lester Eugene N.J.
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Kuhn, Rosalind Eileen Mo.
Kukan, Salem Salah Libya
Kukoy, Julianna Elizabeth Va.
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A.B. 1952, Pomona College
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B.S. 1950, Concord College
Kullback, Sally Eve D.C.
Kuller, Lewis Henry N.Y.
A.B. 1955, Hamilton College
Kulwecz, Walter Va.
Kumin, Adolph Josef D.C.
Kump, Mary Gamble W.Va.
A.B. 1936, West Virginia University
A.M. in Ed. 1952, The George Washington University
Kunitz, Norman Nathan Pa.
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Kunkle, Floyd Stanley, Jr. Pa.
Kunkle, Frank Albert Ohio
Kuntzman, Ronald G. N.Y.
B.S. 1955, Brooklyn College
M.S. 1957, The George Washington University
Kunze, Ralph Edward N.J.
Kupecky, Jere Marguerite Ill.
A.B. 1957, Cornell College
Kurinsky, Chester Charles Md.
B.M.E. 1943, Villanova University
Kurkuian, Badrig Malcolm Md.
B.S. 1942, Massachusetts Institute of Technology
M.S. 1953, The George Washington University
Kurtz, Richard Everett Pa.
B.S. 1955, Lehigh University
Kurtz, William Louis Va.
A.B. in Govt. 1953, The George Washington University
Kurtzman, David Robert Md.
Kushner, Herbert Warren D.C.
Kusumoto, Earl Hisashi Hawaii
Kutluk, Oktay Demir Turkey
B.S. in M.E. 1956, Robert College, Turkey
Kvam, Ernest Ludwig Va.
A.B. 1947, University of Washington
Kvam, Genevieve Alida Va.
Kwak, Sue Korea
Kyle, Philip Wichmann Kans.
Kyne, Peter John D.C.
B.S. 1955, The George Washington University
Kyriazis, Christ William D.C.
A.B. 1948, A.M. 1949, The George Washington University
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Labrie, Roger Joseph D.C.
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Lacey, David Carl, Jr. Va.
B.S. in Ed. 1953, Bowling Green State University
Lacey, Donald Pa.
Lacey, Hubert Nathaniel Va.
Lacey, Joan M. D.C.
Lacey, Joyce Adelaide W.Va.
B.S. 1954, Fairmont State College
Lacey, Margaret Ann D.C.
B.S. 1952, Indiana University
Lackey, Bruce Edward Va.
B.E.E. 1954, Rensselaer Polytechnic Institute
Lackey, Ernest Lee, Jr. Va.
Lacomba, Emma Rosa D.C.
Lacopo, Michael James N.Y.

LaCorte, William Thomas Va.
LaCovis, Mary Anne D.C.
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Lacy, Harry Vurner, Jr. Va.
B.S. 1949, Virginia Polytechnic Institute
Ladd, Culver Sprogle, Jr. Md.
B.S. 1953, University of Maryland
Ladd, Robert Daniel Va.
B.S. 1943, Cornell University
M.B.A. 1947, Harvard University
Ladimer, Irving N.Y.
A.B. 1935, College of the City of New York
J.D. 1940, The George Washington University
Ladner, Donald Aaron Miss.
B.S. 1957, McNeese State College
Lady, George Madison D.C.
Lady, William Howard Va.
Laffey, Jane Maier N.Y.
A.B. 1942, Bryn Mawr College
Laffin, Mark William D.C.
Lafon, Michele Amelia D.C.
LaFontaine, Frank Louis Md.
B.S. 1947, Columbia University
LaFrance, Valere John N.Y.
LaFrank, Joan Barbara Va.
A.B. 1935, University of Pittsburgh
LaGorce, John Oliver II D.C.
Lahm, Robert John D.C.
Lain, Philip Jackson D.C.
B.S. in M.E. 1952, University of Illinois
Laing, Aileen Hyland Va.
Laird, William Everette, Jr. Fla.
B.S. 1956, John B. Stetson University
A.M. in Govt. 1958, The George Washington University
Lajda, Brano M. Va.
Graduate 1942, University of Slovakia
Lalush, Basil William Va.
B.E.E. 1949, Catholic University of America
Lam, Dick G. D.C.
Lam, Elaine Bernadette D.C.
Lamanna, Daniel D.C.
Lamb, James Patrick Va.
A.B. 1956, Catholic University of America
Lamb, Lawrence Eugene Md.
Lamb, Margaret Ga.
A.B. 1956, Goucher College
Lambert, Helen Grigware D.C.
B.B.L. 1935, Gonzaga University
Lambert, Renold Robert D.C.
Lambertson, Norman Franklin, Jr. Va.
Lambrakis, George Basil D.C.
A.B. 1952, Princeton University
A.M. 1953, Johns Hopkins University
Lambros, Veneta Virginia Md.
B.S. 1941, Maryland State Teachers College, Towson
Lamphere, George Elwood D.C.
B.S. 1952, Haverford College
B.S. in Bldg.Eng. and Constr. 1954, Massachusetts Institute of Technology
Lampkin, Julia McCain Ala.
B.S. 1952, University of Alabama
M.S. 1954, The George Washington University
Lamprey, Leonard Lowell Va.
A.B. 1952, Colby College

Lancaster, Edward Leo D.C.
Lancaster, Georgina Carmen D.C.
A.B. 1947, A.M. 1948, The George Washington University
Lancaster, Linda Ann Md.
Land, James William, Jr. Va.
Landau, Earl Kaufman Md.
Landau, Gerald Saul Md.
Landaw, Stephen Arthur N.J.
B.S. 1956, University of Wisconsin
Landberg, Erik Wilgus N.Y.
A.B. 1955, Cornell University
Landefeld, Emil Ernest Md.
B.S. 1951, Ohio State University
Lander, Quintin Scougall Ill.
A.B. 1930, University of Wisconsin
Landon, Charles Raeburne, Jr. Va.
Landrum, William Wayne Tex
Landry, Walter Joseph La.
B.S. in M.E. 1952, Notre Dame Seminary
Landstrom, Karl Sigurd Va.
A.B. 1930, A.M. 1932, University of Oregon
Lane, Anthony Thomas Va.
B.E.E. 1957, The George Washington University
Lane, Charles Thomas N.C.
B.S. 1954, LL.B. 1956, Wake Forest College
Lane, Edward John Henry Md.
B.S. in M.E. 1939, The George Washington University
Lane, Evelyn Drayton D.C.
Lane, Joy Ann Ten
A.B. 1956, Union University
Lane, Larry Edward Tex
A.B. 1956, North Texas State Teachers College
Lane, Lynn Willis N.Y.
Lane, Munson Harmon, Jr. Va.
B.S. 1948, Emory and Henry College
Lane, Neil Royce Va.
Lane, Orley Burdette D.C.
Lane, Stewart Lynburg Va.
Lane, Thomas John N.Y.
Lang, Edward Merrill Cal
B.E. 1956, M.S. 1957, University of Southern California
Langer, Chester Robert Va.
A.B. 1941, University of Washington
Langford, Merle Whetsell Va.
B.S. 1935, North Texas State Teachers College
Langland, James Oliver Iowa
A.B. 1952, Cornell College
Langalis, Charles Robert Va.
Langdon, Beulah May Ind.
B.S. 1951, Ball State Teachers College
Langley, Stephen Swan III Md.
B.S. 1954, University of Maryland
Langluttig, Ann Leslie Md.
Langstaff, Morton Ky.
Langston, Jay Calvin, Jr. D.C.
B.S. 1957, Montana State College
Langston, Patrick Gilbert Fla.
Lanham, Cleveland Lacey Va.
Lanham, Leland LaFayette D.C.
Lanham, Lois Jane Md.
Lanham, Paul Trueman Md.
B.S. 1940, University of Maryland
Lanham, Peter Benedict III Ky.
B.S. in M.E. 1957, Rose Polytechnic Institute

Lanier, Carolyn Braund	Va.
Lankamp, Jan B. S.	D.C.
Lankford, Laurie Gaskins	D.C.
A.B. 1957, Oberlin College	
Lansinger, Rose Bernadette	D.C.
Lanson, Charles Chester	Pa.
Lanthier, Robert Clark	Va.
Lanthier, Theodore Marius	Va.
Lanyi, Thomas	D.C.
Lanzano, Gaetano	Md.
Lapitsky, Mattuci Mattveisch	Md.
LaPointe, Joseph Claude	Md.
B.S. 1949, University of Maine	
LaPrade, John Christian	Va.
B.S. 1957, New Mexico College of Agricultural and Mechanical Arts	
Larew, Howard Bernard	Va.
Large, Jon Sylvester	Iowa
Large, Margaret Barcliff	Md.
A.B. 1941, East Carolina Teachers College	
Largen, Anita Joy	Va.
Larimore, Alanson Lee	Md.
A.B. 1951, Washington College	
Larin, Tim Michael	Va.
Larive, Paul Keith	S.D.
A.B. 1954, B.S. 1956, University of South Dakota	
Larkey, John Wellar	Md.
Larkin, Alfred Joseph	Md.
B.S. 1935, Colgate University	
A.M. in Ed. 1950, The George Washington University	
Larkin, Lillian Jane	D.C.
B.S. in Ed. 1938, Catholic University of America	
Larmon, Elizabeth Angle	Ky.
A.B. 1933, Western Kentucky State College	
Larner, James Herbert	D.C.
Larouche, Ann	Va.
Larro, Dale Henry	Va.
Larsen, Marvin Henry	Nebr.
Larsen, Morris Alven	Iowa
A.B. in Govt. 1957, The George Washington University	
Larson, Joanna	D.C.
A.B. 1957, Oberlin College	
Larson, John Michael	Va.
Larson, Paul Frank	Md.
Larson, Robert Edwin	N.Y.
LaRue, Adrian John	Va.
B.S. 1956, Virginia Polytechnic Institute	
LaRue, Angeline Esmeralda	La.
LaRue, Mary Virginia	Md.
LaSchober, Raymond Phillip Edward	Va.
B.S. 1948, University of Illinois	
Laskey, John Willson	Md.
Laso, Hernan Alfredo	Ecuador
Lasalle, Pepita	D.C.
Lasiter, James William	Md.
Lataner, Lark	D.C.
Latham, Fred Cornelius	Ill.
Latham, Gracia Marguerita	D.C.
Latham, Royce	Md.
Latimer, Edward Emmett	Mo.
A.B. 1929, Westminster College	
Latimer, Rhoda Carroll	Md.
A.B. in Ed. 1956, The George Washington University	
Latimer, Ronald Gordon	Md.
Latt, Cynthia	D.C.
Lattimore, Ruth Savoy	D.C.
Lauderdale, Charles George	D.C.
Lauderdale, James Warthen, Jr.	D.C.
Lauderdale, Julius Homer	D.C.
A.B. 1951, Cornell College	
Laudonio, Frank John	N.Y.
A.B. 1955, Columbia University	
Lauger, Brahna	D.C.
Laughrun, William Augustus, Jr.	N.C.
A.B. 1955, Wake Forest College	
Laurie, Vernon Joseph	Md.
Lauzier, Richard Maurice	Va.
Lavagnino, John	N.J.
Lavanceau, Jean Daniel	Va.
Lavandero, Jaime D.	D.C.
B.S. 1949, Oklahoma City University	
Laverty, Gerald Clayton	Calif.
Lavery, William Edward	Va.
B.S. 1953, Michigan State University	
Lavin, Richard William	Ohio
B.Ae.E. 1950, University of Detroit	
LL.B. 1954, Cleveland-Marshall Law School	
Lavis, Paul William	Va.
B.Ae.E. 1949, New York University	
Lavish, Marjorie Ann	D.C.
Lavoie, Robert Joseph	N.Y.
A.B. 1953, Syracuse University	
Law, Hilda Hollaway	Va.
B.S. 1943, Mary Washington College	
Law, Maude Frances	Md.
A.B. 1930, M.S. 1934, West Virginia University	
Lawler, Edward Emmet	Va.
Lawler, John Patrick	Md.
B.S. 1950, Ohio State University	
Lawler, Valta Clarence	Va.
B.S. 1955, Jacksonville State College	
Lawley, Jack Samuel	D.C.
Lawley, Lucille Richards	D.C.
Lawlor, Patricia Mary	Va.
B.S. in P.E. 1949, The George Washington University	
Lawlor, Thomas Jerome	Md.
Lawrence, Charles Winfield	Va.
Lawrence, Charlotte Anne	Md.
Lawrence Constance Marcy	D.C.
A.B. 1956, Wheaton College	
Lawrence, Frank Benjamin	D.C.
B.S. 1941, Tuskegee Institute	
A.M. 1950, New York University	
Lawrence, James Wesley	Va.
A.B. 1956, University of Denver	
Lawrence, Myron Charles	Va.
B.E.E. 1952, Pratt Institute	
Lawrence, Rose Adeline	D.C.
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Lawrenson, Raymond Miles III	Va.
Lawson, Julian Paul	Md.
A.B. 1954, University of Maryland	
Lawson, Roger Allan	Va.
Lawson, Thomas Evans	Md.
B.M.E. 1953, Tri State College	
Lawton, Richard S.	Va.
Lawton, William Daniel	Md.
A.B. 1950, Brown University	
M.S. 1953, University of Maine	
Lay, John Carbery	Va.
Laylin, Daniel Lewis	D.C.
Laymon, Leo Merril	W.Va.
Layton, Dora Hester	Va.
Layton, Mildred Jane	Va.
Lazaroff, Philip	D.C.
Lazas, Donald Joseph	Md.
Lazrus, Sherman	Md.

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Leach, Harry Jennings, Jr.	Va.
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Leake, Helen Baker A.B. 1950, Marshall College	Md.
Lear, James Richard	D.C.
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Leary, John Casper B.S. 1955, Augustana College	Va.
Leatherman, Stanley James A.B. 1957, Taylor University	Ind.
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Lechlider, Marian Blanche	Md.
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Lee, Joseph Finley, Jr.	N.C.
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Lee, Ralph Watkins III B.S. 1951, University of Maryland	Md.
Lee, Richard Paul	Va.
Lee, Richard Wen Han B.S. 1948, National Chiao-Tung University	D.C.
Lee, Robert Eric	Md.
Lee, Roger Nai Whei	D.C.
Lee, Ronald Calvin A.B. 1956, University of Washington M.P.A. 1957, Syracuse University	Va.
Lee, Virginia Louise A.B. 1957, The George Washington University	Mass.
Lee, Watt	D.C.
Lee, Wendell Harris	Md.
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Leeds, Rebecca	D.C.
Leedy, Herbert Barton A.B. 1950, A.M. 1951, Southern Methodist University	Va.
Leefer, Bernard Irving B.S. in Ch.E. 1939, Louisiana State University	Ala.
Leek, Jacqueline Darnell	D.C.
Leek, Sara Frances A.B. 1954, University of North Carolina	Va.
Leeke, Paul Duane B.S. in E.E. 1955, Michigan State University	Mich.
Leeper, Loren Leon, Jr.	Va.
Lees, Robert Henry	D.C.
Leese, Bernard McKenzie B.S. 1952, The George Washington University	Va.
Lee-Thorp, Vincent Doveton B.S. in M.E. 1950, University of Witwatersrand, South Africa	D.C.
Lefcourt, Arthur Murray	N.Y.
Lefferts, Miles Search	Va.
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Lefwich, Waller Radford, Jr.	Va.
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Legg, Robert Thomas	Va.
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Leggo, Monica Jean	Pa.
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Lehman, Richard Lawrence	N.Y.
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Lehnerd, Alvin Paul	W.Va.
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Leibowitz, George Joseph B.S. 1933, College of the City of New York	Md.
Leibowitz, Saul Eugene	Va.
Leiby, Jewel Doran A.B. 1940, Indiana University	Va.
Leighton, Howard Noyes	Md.
Leimbach, Wendell Bollman B.S. 1948, University of Florida	Md.
Leith, Carroll Irvin, Jr. B.S. 1938, Virginia Polytechnic Institute	Va.
Leith, James Howard B.S. 1952, University of Maryland	Va.
Leius, Ivar	Md.
Leland, Diane Smith A.B. 1957, The George Washington University	D.C.
Leland, Marcia A.B. 1955, Colby College	N.Y.
Leland, Sherman, Jr. A.B. 1952, University of California	Calif.
Lemert, James Edwin B.S. in E.E. 1957, Purdue University	Ohio
Lemly, Frederick Henry, Jr. B.S. 1942, U. S. Naval Academy	D.C.
Lemme, William Philip B.S. 1957, University of Maryland	Ind.
Lemmon, Cyrus Jackson	Colo.
Lemp, Susan Rose	D.C.
Lempio, Paul Standley B.S. in M.E., B.S. in Eng.Adm. 1957, Michigan College of Mining and Technology	Mich.
Lenart, Ivan LL.D. 1932, Pazmany Peter University, Hungary	D.C.
Leneski, Theodore Raymond	Md.
Lenfestey, Marjorie Eleanor	Va.
Lengel, Dwain LaBounty	N.J.
Lenihan, Thomas William	Md.
Lenkin, Ronald Louis	D.C.
Lennon, C. Everett B.S. in M.E. 1948, Texas Agricultural and Mechanical College	Calif.
Lennon, Kathleen Rose	Md.
Lensler, Karl John A.B. 1954, University of Notre Dame	Mich.

Leo, James Joseph Ph.B. 1940, Providence College	Va.
Leo, Lindy Ringling	D.C.
Leon, Bernard Samuel A.B. 1951, New York University	N.Y.
Leonard, Elvin Wilbur	Pa.
Leonard, Louise Christine A.B. 1957, Oberlin College	D.C.
Leonard, Mary C.	D.C.
Leonard, Robert Gedney B.S. in Ch.E. 1939, Newark College of Engineering M.S. in Eng. 1947, Princeton University	Va.
Leonard, Thomas Plin	D.C.
Leone, Alfred B.S.E. 1942, Villanova University	Md.
Leongini, Conrad Anthony	D.C.
Leongomez, Eduardo Matamoros	Va.
Leon Sans, Carlos A.	Cuba
Lepchinsky, Charles Richard B.E.E. 1957, The George Washington University	Pa.
Leppert, Nancy Ruth	D.C.
Lerch, Marilyn A.	Ohio
Lermond, Joseph Wilson	D.C.
Le Sage, Leo Guy B.S. 1957, University of Kansas	Kans.
Lesansky, Helene T. A.B. 1943, University of Miami	Md.
Lescault, Jane Thompson	Md.
Lesevicius, Joseph John	Conn.
Leslie, David Ellis B.S. 1957, California Polytechnic Institute	Va.
Leslie, Leveson Gower, Jr.	Va.
Leslie, Ruth Clyne	D.C.
Lesmes, George Franklin B.S. 1955, College of the City of New York	N.Y.
Lestaevel, Pierre Jean M.E. 1947, National School of Engineering of Lille, France	Va.
Lester, James Dudley A.B. 1957, East Central State College	Okla.
Lester, John Herbert	D.C.
Lester, Sheila	D.C.
LeTellier, James Milton B.S. 1957, Carnegie Institute of Technology	Pa.
Letieca, Albert Andrew B.S. 1951, Ed.M. 1952, University of Maryland	Mass.
Letson, Claire Erwin B.S. 1951, University of Idaho	Idaho
Letson, Walter Neil	Ala.
Letter, Gloria Helene	D.C.
Letterman, Elma Ellen B.S. 1943, Washington University	D.C.
Letts, Miles Harold B.S. 1954, University of Michigan	D.C.
Levan, John Stanley	Pa.
Levandosky, Norbert Richard	D.C.
Levangie, Harriet Rae	D.C.
Levay, Julius Alexander B.S. 1951, Pennsylvania State Teachers College, East Stroudsburg	Md.
Leventhal, Abraham B.Ch.E. 1939, Cooper Union	Md.
Leverone, Harry William, Jr.	Va.
Levin, Burton Ernest A.B. 1949, Duke University	D.C.
Levin, Julian Edwin	D.C.
Levin, Sidney Leon	Md.
Levine, Alan Lewis	Md.
Levine, Aaron M. A.B. 1958, Brooklyn College	N.Y.
Levine, Barbara Zelda	N.J.
Levine, Harold B.S. in C.E. 1954, Purdue University	Va.
Levine, Herbert B.S. 1948, Brooklyn College	D.C.
Levine, Pauline	Md.
Levine, Robert John	Va.
Levine, Sheldon Willam A.B. 1957, University of Maryland	D.C.
Levins, John Patrick B.S. 1955, Boston College	Md.
Levinson, Daniel Richard A.B. 1953, New York University	D.C.
Levinson, Doris Jalkow A.B. 1955, Brooklyn College	D.C.
Levinson, Elliot Bernhardt	Calif.
Levitan, Laurence B.S. 1955, Washington and Lee University	D.C.
Levitan, Miriam	D.C.
Leviten, Samuel Harold	Md.
Levitov, Edith Sylvia A.B. 1949, The George Washington University	Va.
Levitt, Julian S. B.S. 1950, College of the City of New York M.S. 1953, Kansas State College	D.C.
Levitt, Morton B.S. 1951, College of the City of New York B.S. in Phar. 1957, Fordham University	D.C.
Levitzky, Maria B.M.L. 1939, Tartu University, Estonia	D.C.
Levock, Carl Andrew B.S. 1949, Waynesburg College A.M. (C.G.S.) 1957, The George Washington University	Md.
Levow, Maxine Phillips	Md.
Levy, Earl B.E.E. 1952, Rensselaer Polytechnic Institute	Va.
Levy, Lorraine Marlene A.B. in Ed. 1957, The George Washington University	Md.
Levy, Marvin	D.C.
Levy, Ruth Alice B.S. 1957, University of Delaware	D.C.
Levy, S. David	D.C.
Levy, Sidney A. A.B. 1943, Michigan State University	Md.
Levy, Steven Everett A.B. 1955, The George Washington University	Va.
Levy, Sue Ann	D.C.
Lewis, Alan Mead	Va.
Lewis, Anna Mae	D.C.
Lewis, David B.S. 1954, University of Maryland	Md.
Lewis, David Wesley B.S. 1952, Maryland State Teachers College, Frostburg	Md.
Lewis, Dawn Anderson B.S. 1957, Simmons College	Va.
Lewis, Dexter Seth A.B. 1956, Harvard University	Va.
Lewis, Ethel Maggette A.B. 1952, Bennett College A.M. 1953, Western Reserve University	N.C.
Lewis, Frank Lynford	Va.

Lewis, Frederick Eugene Fla.
Lewis, Gene Hope Md.
Lewis, Gilbert Howard Md.
B.S. 1948, U. S. Merchant Marine Academy
B.S. 1951, Massachusetts Institute of Technology Md.
Lewis, Harold Gray
B.S. in A.E. 1947, North Carolina State College N.C.
Lewis, J. Wynelle
A.B. 1931, Wesleyan College
A.M. 1949, Columbia University Va.
Lewis, James Thomas
A.B. 1953, Randolph-Macon College Md.
Lewis, James Whittier
A.B. 1956, Washington and Lee University D.C.
Lewis, Jerrold Michael Va.
Lewis, John C. K. D.C.
Lewis, John Warren
A.B. 1948, The George Washington University D.C.
Lewis, Joseph Ivey
B.S. 1952, Virginia State College Ind.
Lewis, Margie Jane Calif.
Lewis, Muriel Janet
A.B. 1944, University of California
A.M. 1952, New York University Va.
Lewis, Oliver Wendell D.C.
Lewis, Robert Allen
B.S. 1951, Oregon State College Va.
Lewis, Robert Wells
A.B. 1957, College of William and Mary Md.
Lewis, Samuel Roy Va.
Lewis, Shirley Prince Mass.
Lewison, Walter Richard Va.
Leyden, John Gerald China
Li, Chin Hsien
A.B. 1943, University of Shanghai, China Md.
Li, Claire Va.
Li, Louise Elizabeth
A.B. 1954, The George Washington University D.C.
Li, Tsung Mi D.C.
Liang, George Kuo-Chi
A.B. in Govt. 1957, The George Washington University Iowa
Lias, Thomas Lee
A.B. 1956, University of Iowa Md.
Libby, Richard Mellen D.C.
Liberman, Harold Martin Md.
Liberman, Harry
B.E.E. 1948, Ohio State University D.C.
Libman, Gerald N.Y.
Lichtenthal, Jack
A.B. 1957, University of Connecticut
M.S. 1957, University of Wisconsin D.C.
Lichtman, Alec Nathan D.C.
Lichtman, Marilyn Va.
Lichtman, Robert Martin
A.B. 1952, J.D. 1955, University of Chicago Pa.
Liddick, David LeRoy D.C.
Lidji, Lena D.C.
Lieberman, Herbert Jacob
B.S. 1954, Georgetown University Va.
Lieberman, Libby Shull D.C.
Liechty, Warren Steiner
A.B. 1949, University of Notre Dame
A.M. 1950, Columbia University

Liekweg, Catherine Bernadette
A.B. 1942, Trinity College
Liepina, Rita Gundega
Lietwiler, Christian Willard
Lietwiler, Helena Kechne
A.B. 1928, Western College for Women
A.M. in Ed. 1956, The George Washington University
Ligenza, Walter John
Liggio, Gloria Joyce Ann
Liggio, Rosanne Marie
Light, James Wynson
Light, Melvin
A.B. 1950, Temple University
Light, Richard Lee
B.S. in M.E. 1952, University of Missouri
Lightner, Calvin Newton
Liles, Francis Scheider
Liles, Susan B.
A.B. 1928, Howard University
A.M. 1953, Kent State University
Lilien, Charles Ernest
A.B. in Govt. 1950, A.M. in Govt. 1951, The George Washington University
Lillard, Gerald Francis
B.S. 1927, U. S. Military Academy
Lilley, Sally Booth
Lilliefors, Hubert Whitman
A.B. 1952, The George Washington University
A.M. 1953, Michigan State University
Lilly, John Cunningham, Jr.
Lilly, Richard Gladstone
B.S. 1946, U. S. Naval Academy
M.S. in E.E. 1951, University of Pennsylvania
Lim, Chung Taek
LL.B. 1949, Seoul National University, Korea
Limbert, Dorothy Adele
A.B. 1933, University of Illinois
Limbert, Lois Frances
Limpouch, Frank Alois
Lin, Geeming
Lin, Hsiu
Lin, Tze Hsiun
Ed.B. 1944, National Chekiang University, China
Linassi, Maria
Linch, Raymond John
Lincicome, Donald Cecil
B.S. in E.E. 1953, University of Illinois
Linck, Raymond John
Lincoln, Helen Maureen
B.S. 1954, Hahneman Medical College and Hospital
Lind, John Arthur
B.S. 1954, Bates College
Lindauer, Howard Herbert
A.B. 1955, College of the City of New York
Lindberg, Amanda Atwood
Lindberg, Carl Gunnar
Lindberg, Siri-Anne Gudrun
Linde, Richard Emil
Lindell, Mary Alicia
Linden, John Edward
Linden, Virginia Catherine
A.B. 1950, University of California

Linderman, John Rodney	Md.
Lindley, Jonathan A.B. 1956, The George Washington University	Va.
Lindner, Frederick, J. B.S. 1954, Randolph-Macon College	Va.
Lindner, Judith Gertrude	Md.
Lindon, Herbert Arthur	D.C.
Lindquist, George Ronald	N.J.
Lindsay, Douglas Edward A.B. 1950, The George Washington University	Va.
Lindsay, Sandra Huntington	D.C.
Lindsey, Jonathan Asmel	Ga.
Lindsey, Thomas Francis	Va.
Lindskold, John Eric B.S. 1956, University of Illinois	Ill.
Lindstaedt, Regina Frances	Md.
Lineberry, Robert Gipsy	Va.
Linehan, Patricia Booth A.B. 1954, Mount Holyoke College	N.Y.
Lingenfelter, Ivan Glen	Pa.
Liner, Dorothy Lord B.S. 1952, D.C. Teachers College A.M. in Ed. 1953, The George Washington University	Va.
Linhart, Joseph Wayland B.S. 1954, The George Washington University	Va.
Linkins, Anna Nell	Md.
Linko, Susan	D.C.
Linn, Carol Ida	D.C.
Linn, James Bernard	S.D.
Linn, Walter Armin B.S. 1924, U. S. Military Academy	D.C.
Lintner, John Edwin	Va.
Lione, Richard Guy B.S. 1954, University of Wisconsin	Wis.
Lipchik, Margaret B.S. 1947, University of Pittsburgh	D.C.
Lipes, Wheeler Bryson	Va.
Lipham, Marie Derby	Ohio
Lipman, Robert Steven	D.C.
Lipnick, Stanley Melvin A.B. 1956, Columbia University	D.C.
Lipp, Edward B.S. 1949, Temple University A.M. 1950, University of Pennsylvania	Va.
Lippert, Anne Maureen	Md.
Lippman, Isadora Rose	Va.
Lipitz, Hannah	D.C.
Liskey, Russell Stuart	Va.
Lisle, Clayton Charles B.S. in Ed. 1956, University of Idaho	Idaho
Lisle, Thomas Allen	Md.
Liss, Esther H.	D.C.
Liss, Fabian Thomas	Md.
List, George A.B. 1955, The George Washington University	D.C.
List, William Dawson A.B. 1956, University of Maine	N.J.
Liston, Hardy, Jr. B.S. in M.E. 1943, Howard University	N.C.
Litman, Malcolm Albert B.S. in M.E. 1951, Purdue University LL.B. 1957, University of Kansas City	Mo.
Litoff, Harriet Dee	D.C.
Litt, Sheldon Murray	D.C.
Littell, Nelson, Jr. B.S. 1941, Pennsylvania State University	D.C.
Little, Dorothy Ferguson B.S. 1948, D.C. Teachers College	D.C.
Littlepage, Judith Alvord	D.C.
Littleton, George James B.S.E. 1947, University of Mississippi	Va.
Litton, Ralph, J. B.S. 1954, University of Idaho	Idaho
Livesay, James Allenby	D.C.
Livingston, John Frederick, Jr. B.S. in B.A. 1955, University of Arkansas	Ark.
Livingston, Robert Gerald A.B., A.M. 1953, Harvard University	Conn.
Lizdas, Anthony	Md.
Llaneras, Manuel Alvarez	D.C.
Llewellyn, Lynn Gresham B.S. 1957, College of William and Mary	Va.
Llosa, Luis Edgardo Graduate 1928, Peruvian Naval Academy	Peru
Lloyd, John Matthew, Jr. B.S. 1955, Kent State University	Md.
Lloyd, John Stamm B.S. 1954, University of Pittsburgh	Va.
Lloyd, Nancy Genevieve	D.C.
Lloyd, Thomas Henry, Jr. A.B. 1954, University of North Carolina	Va.
Lobl, Lawrence Tolstoi	D.C.
Lobo, Jo Ellen Perry A.B. 1951, University of California	Va.
Lobo, Oswaldo Castro A.B. 1956, The George Washington University	Brazil
Lobred, Janet Kasdon	Md.
Lockaby, Joseph Rafe	N.C.
Lockard, Sammy Page	D.C.
Locke, Laurance George	N.Y.
Lockett, Thomas Hall A.B. 1917, Centre College	D.C.
Loe, Helen Vivian	D.C.
Loe, Myron L. A.B. 1951, The George Washington University	D.C.
Loeb, Rodney Webster A.B. 1949, University of California LL.B. 1952, LL.M. 1957, Harvard University	La.
Loeffler, Donald Lee B.S. 1952, University of Dayton A.M. 1953, Columbia University	Ohio
Loeser, Norma Maine	N.Y.
Loewy, Richard Allen	N.Y.
Lofdahl, James Edward	D.C.
Loffswold, Lester Sidney B.S. in M.E. 1946, University of Colorado	Va.
Lofgren, Christina Gunilla	D.C.
Lofmark, Joyce Evelyn Huff	Va.
Loftin, Gordon Kendall B.S. 1940, U.S. Coast Guard Academy	D.C.
Loftus, Lillian Catharine	D.C.
Logan, Gerald Francis, Jr. B.S. 1949, M.S. 1952, University of Pittsburgh	Md.
Logan, Lois Anne B.S. 1956, D.C. Teachers College	D.C.
Logosso, Ronald Daniel	N.Y.

Okla.
Logue, Ruth
B.S. 1943, Radcliffe College
A.M. in Govt. 1956, The George
Washington University Va.
Lohnes, Roberta Lee D.C.
Loiry, David Alan
B.S. 1953, Alabama Polytechnic
Institute Md.
Lokerson, David Thornton Md.
Lokerson, Donald Custis Md.
Lokerson, Doris Anne Md.
Lokerson, Jean Elizabeth D.C.
Lomacky, Oles
B.C.E. 1956, College of the City of
New York N.Y.
Lombardo, Rose Utah
London, Dan L. Va.
London, Gertrude Md.
Long, Barbara Weaver Va.
Long, George Richard
A.B. 1948, Dickinson College Pa.
Long, Melvin Eugene Md.
Long, Nancy Catherine
A.B. 1952, The George Washington
University D.C.
Long, Robert Eugene
A.B. 1953, Indiana University N.Y.
Long, Samuel Eugene
B.S. 1955, Wagner College Md.
Longfellow, Veta Mae
A.B. 1944, College of Medical
Evangelists Md.
Longmore, James Arthur Hawaii
Loo, George Wing Tat
B.S. 1952, University of Hawaii Md.
Loomis, Jill Spangler
B.S. 1956, Cornell University Md.
Looney, Howard C.
B.S. in E.E. 1928, University of
Michigan Pa.
Looney, Ray Michael Ohio
Loop, Curtice D.C.
Loose, Frederic De Turck D.C.
Lopatin, Leon William Va.
Lopez, George Va.
Lopez, Hugo Roberto
B.S. 1954, University of Houston Puerto Rico
Lopez, Manlio Maldorado
A.B. 1957, The George Washington
University Pa.
Lorah, Ronald Marvin Va.
Lord, Charles M., Jr.
B.S. 1953, University of Missouri Ill.
Lord, Elizabeth Adams Pa.
Lord, Jean Ethel Va.
Lord, John Merritt Wis.
Lord, Peter Joseph
A.B. 1951, University of Wisconsin Va.
Lord, William Henry Minn.
Lorentzen, Beverly Ann Va.
Lorenz, Gilbert Gustav
B.S. 1934, Massachusetts Institute of
Technology Switzerland
Lorez, Erika Lydia Md.
Lorsong, Albert John, Jr.
B.S. 1951, Georgetown University Va.
Lott, Alice M.
A.B. 1943, Ed.M. 1947, Syracuse
University Va.
Lott, Frederick Schoonmaker Calif.
Lott, Marilyn Harbin D.C.
Lotter, Barbara Maria D.C.
Louchheim, Judith Helen
A.B. 1955, Radcliffe College Va.
Loughman, James Joseph

Loughran, Joseph Braxton
A.B. 1956, University of Virginia
Loughrey, Ronald Edward
Louka, Kathryn Theresa
A.B. 1957, The George Washington
University
Lourenço, Manuel Joseph
B.E.E. 1950, The George Washington
University
Loutsion, George Russell
Love, Carl George
A.B. 1950, College of Wooster
Lovett, Jacqueline Yatta
Lovett, Lee Gilson
A.B. 1955, Principia College
Lovelace, James W.
Lovelace, William Wayne
Lovorn, Grace Barrett
Lowder, Jerry Lawrence
B.C.E. 1953, North Carolina State
College of Agriculture and
Engineering
Lowe, Allan Matthew
B.S. 1956, University of Maryland
Lowe, Edwin La Mar
Lowe, Harvey Spencer, Jr.
Lowe, John
Lowe, John Carl
Lowe, John Wiley
Lowe, Robert Gayle III
Lowe, Willliam Clark
Lowenstein, James Gordon
A.B. 1949, Yale University
Lowenthal, Herman
A.B. 1951, The George Washington
University
Lowman, Joseph Allen, Jr.
B.S. 1951, University of Alabama
Lowrance, George Ercell
B.S. 1956, Tennessee Polytechnic
Institute
Lowstuter, Josephine Everly
B.S. 1937, University of Pittsburgh
Loyola-Guerrero, Ramon
Lu, Davidson C. C.
Lu, Nancy
Lubin, Charlotte
A.B. 1955, Temple University
Lubore, Diane Eve
Lucas, Burton Loren, Jr.
B.S. in E.E. 1944, U.S. Naval Academy
Lucas, Donald Edward
A.B. in Govt. 1955, The George
Washington University
Lucas, George Lamoyne
A.B. 1957, Ohio University
Lucht, Theodore Henry August
B.S. in C.E. 1947, University of
Illinois
Lucic, Edward
B.S. 1951, University of Maryland
Lucid, Leo Michael
Luckhardt, Philip George
B.S. 1956, Columbia University
Luckyi, George
Ludlow, Allen Dyer
Ludlow, Sally Anne
Luebke, David Lawrence
Luecking, Mary Lou
B.S. 1956, University of Maryland
Luedecke, Jan Lee
Lueking, Francis Joseph
B.S. in E.E. 1956, University of
Tennessee

Luff, Charles Andrew	N.Y.
Lugo, Jose Roberto	Puerto Rico
A.B. 1954, University of Puerto Rico	
Lukach, Joyce Barbara	N.J.
Luks, Joan Elizabeth	Va.
Lum, Harry Soi Lun	Hawaii
B.S. 1951, New York University	
M.S. 1952, Columbia University	
Lum, Thomas C. H.	Hawaii
B.S. in A.E. 1951, Washington University	
Lunceford, Sigmon Austin	Ala.
A.B. 1941, LL.B. 1948, University of Alabama	
Lunchick, Ethel Louise	Md.
B.S. in Ed. 1951, Boston University	
Lund, Dorothy Alice	Va.
Lund, John Charles	Md.
Lundgren, Edward Charles, Jr.	Va.
Lune, Jack Francis	Nev.
B.S. in B.A. 1953, University of Nevada	
Luongo, Frank Alfred	Mass.
A.B. 1956, Bates College	
Lupo, Pietro	Md.
Lupton, Frederick Arthur, Jr.	Texas
A.B. 1949, Duke University	
Luria, Helen	D.C.
Luria, Charles	D.C.
B.S. 1938, College of the City of New York	
Lurie, Oscar Mendel	Md.
A.B. 1935, A.M. 1937, Harvard University	
Lurie, William	N.Y.
B.S.E., Ch.E. 1936, College of the City of New York	
Luscavage, James Vincent	Va.
Lusk, Joseph Friend	N.Y.
Luskin, Robert Sylvan	Md.
Lustig, Laura	Va.
Luther, Robert John	N.Y.
Luthringshauser, Daniel Rene	N.Y.
B.S. 1956, New York University	
Lutton, Clifford Loy, Jr.	D.C.
Luttrelll, John Henry	La.
Lutz, George Willard	Va.
B.S. in M.E. 1942, University of Iowa	
Lyza, Michael	D.C.
Lykes, Richard Sides	Texas
Lyle, Nelson Bates	D.C.
Lyle, Vivien J.	Va.
Lynch, Barbara Ann	D.C.
Lynch, Dorothy Mae	D.C.
Lynch, Joe Wilbur, Jr.	Md.
B.S. in Ch.E. 1949, University of South Carolina	
M.S. in Ch.E. 1951, Georgia Institute of Technology	
Lynch, John Thomas, Jr.	Va.
Lynch, Katharine Martin	D.C.
B.S. 1953, D.C. Teachers College	
Lynn, James A.	Md.
A.B. 1938, A.M. 1939, University of California at Los Angeles	
Lynn, Lyman Dural	Va.
A.B. 1939, The George Washington University	
Lynn, Merton Harvey	D.C.
Lyon, Carl Vernon	Va.
A.B. 1949, West Virginia Wesleyan	
A.M. 1951, American University	
Lyon, Seaborn Lamar	Va.
B.S. 1955, D.C. Teachers College	
M.S. 1956, College of William and Mary	
Lyons, Donald Joseph	Conn.
Lyons, Francine Lee	D.C.
Lyons, Joseph Stewart	D.C.
Lytle, J. Warren	Md.
Lytle, John Albert	Va.
B.S. 1953, The George Washington University	

M

Ma, Hsueh-Ling	China
Maassel, Louis Otto	Ohio
B.I.E. 1957, Ohio State University	
Mabry, Joseline Margarete	Va.
MacCallum, Lucile Heath	Va.
B.S. 1927, A.M. 1930, Columbia University	
MacCarthy, Shane, Jr.	D.C.
MacCartney, Jacqueline Jean	D.C.
Maccaulay, Joseph Hugh	D.C.
MacClane, Frances Conrad	D.C.
B.S. 1937, D.C. Teachers College	
A.M. 1942, New York University	
MacClinchie, Kathryn Schaefler	Va.
B.S. 1931, University of Illinois	
MacDonald, Barbara Christine	Md.
MacDonald, Jo Ann	Va.
MacDonald, John Coyle	D.C.
MacDonald, Mary Alice	Texas
MacDonald, Ralph Simes	N.H.
MacDonald, Robert Childs	Va.
Mace, Betty Ann	Ky.
Mace, Richard Reynolds	D.C.
Macedo, Pedro Manuel	Brazil
Machado, Marielena	D.C.
Machanic, David	Va.
A.B. 1954, University of Vermont	
Machrowicz, Tod Michael	Va.
Macielinski, Adam Maria	D. C.
LL.M. 1931, M. Pol. Sc. 1934, University of Lwow, Poland	
MacInnes, Robert Alexander	Va.
A.B. 1950, Boston College	
MacIntosh, Rod James	Mich.
Mack, James Leonard	D. C.
B.S. 1954, D. C. Teachers College	
A.M. 1956, New York University	
Mackey, Howard Joseph	Va.
A.B. 1951, A.M. 1953, New Mexico Highlands University	
Mackey, Mary Ellen	Va.
Mackiewicz, John Jacob	D. C.
B.S. in Ch.E. 1951, Yale University	
Mackintosh, Mary Elizabeth	Md.
B.S. 1957, University of Maryland	
MacLaren, Edward Wallace, Jr.	Mass.
Maclarty, David Collins	Md.
MacLean, William Gordon, Jr.	Minn.
B.S. 1957, University of Maryland	
MacLeod, Donald George	Mass.
Macleod, Morna Whitehurst	Md.
MacManus, Elizabeth Joyce	Va.
A.B. 1954, Hollins College	
MacMillan, Dalphine	Pa.
A.B. 1939, Cornell University	
MacMillan, Judith Thompson	N. C.
B.S. 1953, The George Washington University	

MacMillan, Latimer Whittle, Jr. Mass.
B.S. in E.E. 1939, Massachusetts Institute of Technology
MacMillan, Robert F. Va.
B.S. 1949, Lafayette College
MacMillan, Ronald Alexander Va.
MacNaughton, Marcia Jean Va.
A.B. 1956, Barnard College
MacNeil, Joseph Hector Va.
A.B. 1956, The George Washington University
MacNeill, Richard Kendrick Oreg.
LL.B. 1956, Northwestern University
MacNichol, Marilee Brandon Fla.
MacPherson, Ann Awdukewich Mich.
B.S. 1949, Western Michigan College
MacPherson, Robert Harris Wyo.
B.S. in B.A. 1937, Rutgers University
Macris, Athena Greece
A.B. in Govt. 1957, The George Washington University
Macurdy, Arthur Coldwell Md.
MacVicar, Betty Byers Va.
Madaris, John De, Jr. Va.
Madden, Blanche Clare Va.
A.B. 1953, St. John's University
Madden, David Frederick Maine
B.S. 1956, Maine State Teachers College, Gorham
Madden, Eugene George Va.
A.B. 1951, King's College
Madden, Mary C. Md.
Madden, Myrtle Nathlie Va.
Madden, Richard Leo Ind.
B.S. 1956, Indiana University
Maddock, Kay Joan Va.
Maddock, Terrence James Va.
Maddox, Anna Louise D.C.
Maddox, Betty Rushing D.C.
A.B. 1955, The George Washington University
Maddox, Ronald Paul D.C.
A.B. 1952, Swarthmore College
Maddox, Silas Alvin Va.
B.S. in M.E. 1951, Virginia Polytechnic Institute
Maddox, William Howard, Jr. S.C.
A.B. 1951, Wofford College
Madigan, Robert Joseph Md.
Madison, Janet Rose Va.
A.B. 1936, B.E. 1938, University of Cincinnati
Madsen, Andrew Calvin Va.
B.S. in Eng. 1955, The George Washington University
Maestri, Anthony, Jr. Va.
Magee, Beverly Kathryn Va.
Magee, Charles Foster Va.
B.S. in M.E. 1950, Oklahoma Agricultural and Mechanical College
Magee, Gilbert Ray Texas
A.B. 1952, University of Texas
Magee, William Gloth, Jr. Va.
Mager, Mary Elizabeth Va.
Maggi, Mary Ann Cecilia D.C.
Maggio, Margaret Mary N.J.
Magin, George Benedict, Jr. Md
B.S. 1946, University of Chattanooga
M.S. 1952, The George Washington University
B.S. 1956, American University
Magnan, Mark Wilfrid Wis.
B.S. 1956, University of Maryland

Magnant, Claire Irene Mass.
Magnant, Janet Rollande Mass.
Magness, Earle Wilbur Va.
Magnus, Andrea Joan D.C.
A.B. 1931, University of Montana
A.M. 1948, Columbia University
Magnuson, Richard Allen Calif.
A.B. 1957, Stanford University
MaGourik, Norma Jean Texas
Magro, Cybele Simoes Brazil
Magro, Haydee Simoes Brazil
Maguire, Alice Jane Va.
Maguire, John Barry Va.
Magurn, Katherine Ford Md.
A.B. 1934, Randolph-Macon Woman's College
Mahadeen, Adeeb D.C.
Mahaffey, Lorraine Wingo Va.
Mahan, John Joseph D.C.
Mahassel, Albert Abraham D.C.
B.S. 1952, Worcester Polytechnic Institute
Mahler, Robert John Md.
B.S. 1955, University of California at Los Angeles
Mahmood, Ali Shakry Md.
Mahon, Frank May Texas
B.S. 1952, M.S. 1955, North Texas State College
Mahoney, Frank Joseph III Va.
Mahoney, Haynes Richardson, Jr. Fla.
Mahoney, Joan Helen D.C.
A.B. 1949, University of Maryland
Mahorney, Florence Hathaway D.C.
B.S. 1922, B.Ph. 1925, University of Wisconsin
Maidenbaum, Howard Va.
A.B. 1956, New York University
Maier, John Boniface N.Y.
B.S. in Ch.E. 1957, University of Rochester
Maillard, Brenda Louise N.Y.
Mainord, Joe Alvin Texas
Mainzer, Francis Kirkwood Pa.
A.B. 1952, Amherst College
Maio, Domenic Anthony D.C.
B.S. 1956, Georgetown University
M.S. 1957, The George Washington University
Maitland, Georgia Fenwick Va.
Majors, Robert Powell, Jr. N.C.
B.S. 1957, Davidson College
Majzels, Marlena Brazil
A.B. 1953, University of Brazil
A.B. 1956, Western College
Makepeace, Thomas Newton Ohio
Maki, Wilbert Richard Md.
Makuck, Helen Catherine Conn.
Maksimick, Dorothy Patricia Pa.
Malasky, Carl Robert D.C.
Malave, Jorge Luis Puerto Rico
A.B. 1949, Polytechnic Institute of Puerto Rico
Malehorn, Merlin Kenneth Va.
A.B. 1948, A.M. 1955, University of Colorado
Maling, Henry Forbes, Jr. Md.
B.S. in E.E. 1939, Northeastern University
M.S. 1940, D.S. 1947, Harvard University

Malinowski, Bronislaus Henry D.C.
B.S. 1955, Philadelphia College of Pharmacy and Science
Malki, Abedallah Usama D.C.
Malkin, Eugene Mayer D.C.
A.B. 1952, University of Maryland
Mallia, Samuel Frank N.J.
Mallin, James A. Md.
B.S. in E.E. 1949, Rensselaer Polytechnic Institute
M.S. in E.E. 1957, University of Maryland
Mallios, Dimitri Peter D.C.
A.B. in Govt. 1954, The George Washington University
Malloy, James Kevin D.C.
Malone, Alice Shuss Pa.
B.S. 1956, Pennsylvania State Teachers College, Shippensburg
Malone, Charles John Colo.
B.S. 1955, University of Arizona
Malone, Dana Bradford Mass.
A.B. 1938, Harvard University
Malone, David Michael Ill.
Malone, James Roland Pa.
Malone, Walter Joseph Pa
Maloney, James Edward D.C.
Maloney, Judith Marie Pa.
Malossi, Leo Italo N.Y.
B.C.E. 1947, Rensselaer Polytechnic Institute
Maltz, Harry Isaac Va.
A.B. 1956, New York University
Malzeke, Harry Francis N.J.
B.S. 1954, Washington and Lee University
Malzone, Francis Richard Md.
B.S. in Phar. 1953, The George Washington University
Mambert, William Alonza Va.
Manack, Geoffrey David Va.
Manalo, Rogelio Wenceslao Philippines
Manarin, Lucinda Olga D.C.
A.B. 1956, Pennsylvania State University
Mandel, Phyllis Sylvia N.Y.
Mandes, Evans John D.C.
Mandis, Elsie Kathryn Va.
Mandley, Joyce Jackson Va.
Mandt, Maxine Ann Minn.
A.B. 1949, University of Minnesota
Manganaro, Raphael Neri D.C.
B.S. 1925, M.D. 1927, Georgetown University
Mangold, Harry Armstrong Ohio
A.B. 1950, College of Wooster
B.D. 1953, McCormick Seminary
Manheimer, Helen Sylvia N.Y.
A.B. 1948, Queens College
A.M. 1950, University of Minnesota
Mankowski, Jose D.C.
Manley, Clyde Everett D.C.
Manley, Virginia Lee D.C.
B.S. 1948, North Carolina State Teachers College, Elizabeth City
Manly, R. J. D.C.
A.B. 1933, Austin College
Manly, Wanda Lull N.C.
Mann, Estelle Gray D.C.
B.S. 1949, Morgan State College
A.M. 1956, New York University
Mann, Frederick H., Jr. Fla.

Mann, John Schamann Md.
B.S. 1957, University of Maryland
Mann, Oscar D.C.
Mann, Ruth Louise Va.
Mann, Vera Williams Va.
A.B. 1941, Texas Christian University
Manning, John Raymond Iowa
B.S. in Eng. 1957, The George Washington University
Manning, Louis Meneghini Colo.
Manning, Richard Thomas D.C.
Manning, Rosemary Christine Mass.
B.S. 1956, University of Massachusetts
Manning, William Henry, Jr. Va.
A.B. 1954, Emory University
B.S. 1958, Georgia Institute of Technology
Manolatos, Jerry Md.
Manolukas, Paul Angelo Va.
B.S. 1950, University of Pittsburgh
M.B.A. 1955, University of Pennsylvania
Manon, John Joseph D.C.
B.S. in Ch.E. 1954, Catholic University of America
Manos, Mary C. D.C.
Manoukian, Milton Nev.
A.B. 1957, University of Nevada
Manriquez, Romulo Alza Philippines
LL.B. 1952, Far Eastern University, Philippines
Mansfield, William Alton Va.
Manson, William Everett N.H.
A.B. 1952, University of New Hampshire
Mansur, Jean Va.
B.S. 1946, University of Kansas
Mantell, Leroy Harris Va.
A.B. in Govt. 1942, A.M. 1945, The George Washington University
Mantzouranis, Athanasios P. Greece
Mantzouranis, Georgia K. D.C.
Mantzouranis, Michael George D.C.
Manzon, Barbara Jean Md.
Manzon, Philip Howard Md.
Maradiaga, Jorge Alberto Honduras
Marcello, James, Jr. Md.
March, Richard William Va.
B.S. 1949, Juniata College
Marchant, Marvin Quinby D.C.
A.B. 1950, Vanderbilt University
Marchello, Eugenia Theresa D.C.
Marchioni, Jack Barthamus N.J.
Marco, Donald Pa.
Marcov, Helen Eilene Pa.
Marcovitz, Ruth D.C.
Marcus, David Pa.
Marcus, Joel David N.Y.
A.B. 1954, Columbia University
Marcus, Martin Stanley D.C.
Marcus, Stanley Raymond Md.
B.S. in E.E. 1938, University of Rhode Island
Marcuse, William Va.
A.B. 1947, A.M. 1948, University of Connecticut
Ph.D. 1956, Columbia University
Mareiniss, Linda Thelma N.J.
Mares, Christopher Gilbert Va.
Marfisi, Philip Michael Nev.
A.B. 1957, University of Nevada

Marfut, Harry	D.C.
A.B. 1956, The George Washington University	
Margolin, Emanuel David	Md.
A.B. 1944, Brooklyn College	
Margolis, Lawrence Stanley	Pa.
B.S. in M.E. 1957, Drexel Institute of Technology	
Margraff, Jo Ann	Va.
Mark, Lee N. K.	D.C.
Marker, Sidney	Md.
Markert, George Washington III	Pa.
Marks, Melvyn Lyon	D.C.
Marks, Richard B.	W.Va.
B.S. 1954, Morris Harvey College	
A.M. 1955, Marshall College	
Marks, William B.	Md.
A.B. 1925, College of William and Mary	
Ed.M. 1933, Duke University	
A.M. 1937, University of Michigan	
Markwood, Erica	D.C.
Markwood, Isabel	D.C.
Marletta, Florence Julia	D.C.
Marlin, John Marshall	Md.
Marlow, Ann Antoinette	Md.
Marlow, Charles Austin, Jr.	Va.
A.B. 1953, The George Washington University	
Marlow, John	Idaho
B.S. 1957, Brigham Young University	
Marlow, Linda Marietta	Md.
Marquardt, Frank Richard	Va.
Marquez, Agapito Valdez	N.M.
Marrazzo, Rudolph Michael	Pa.
B.S. in M.E. 1951, Pennsylvania State University	
Marrero, Robert	N.Y.
Marrone, Rose	D.C.
Marrorano, Vincent John	Md.
Marrs, Cyril Jacob	Va.
Mars, Marie B.	Va.
Marschalko, Cornell Stephen	Va.
Marseglia, Eugene	D.C.
Marselle, John Edward	Va.
Marsh, Alan Burton	D.C.
Marsh, Ernest Victor	Md.
Marsh, John Thomas	Va.
Marsh, Julie Ann	D.C.
Marsh, Steve Albert	D.C.
B.S. 1952, University of Notre Dame	
Marshall, Charles Howard	Ohio
Marshall, Constance Mary	D.C.
Marshall, Dorothy Katherine	Md.
Marshall, Earla Ball	D.C.
A.B. 1918, Meredith College	
Marshall, Elizabeth Drew	Va.
Marshall, Ernest David	Ky.
B.S. 1957, University of Kentucky	
Marshall, George Hamilton	D.C.
Marshall, Jane Snyder	Ky.
A.B. 1956, University of Kentucky	
Marshall, Janet Katherine	Calif.
Marshall, Jean	Va.
B.S. 1950, Mary Washington College	
Marshall, Marion Barbara	Ill.
Marshall, Mary Templeman	Va.
A.B. 1957, American University	
Marshall, Phebe	Pa.
Marshall, Robert Russell	Va.
B.S. in E.E. 1954, U. S. Naval Academy	
Marshall, Ruth	D.C.
Marsosudiro, Soeharjo	Indonesia
Marston, Donn Richard	N.Y.
A.B. 1956, Harvard University	
Martin, Alfred Patrick	N.J.
B.E.E. 1954, Manhattan College	
Martin, Annie-Laurie	D.C.
Martin, Barbara Lee	Md.
Martin, Charles Edgar	Nebr.
B.S. 1951, U. S. Coast Guard Academy	
Martin, Cyrus Albert	Va.
B.S. 1935, Iowa State College	
M.E.A. 1957, The George Washington University	
Martin, Dale Hamilton	Va.
Martin, Doris Eileen	Va.
Martin, George Elliott	Fla.
B.S. 1953, Florida State University	
Martin, Gerald	Md.
B.S. in E.E. 1949, University of Denver	
Martin, Glenn Eldred	Pa.
B.S. 1951, Pennsylvania State University	
Martin, Harold LeRoy	Md.
Martin, Helen Ruth	Va.
A.B. 1925, Henderson Brown College	
Martin, Henry Francis Beaumont	D.C.
A.B. 1956, The George Washington University	
Martin, James Richard	D.C.
Martin, James Roger	Va.
B.S. 1940, North Texas State College	
Martin, Janet Ann	Va.
Martin, Jeffrey Neal	Maine
A.B. 1950, University of Maine	
Martin, Joan Carol	D.C.
Martin, John Edwin	Va.
Martin, Juanita Louise	D.C.
Martin, Julius Corpening III	D.C.
Martin, Lea Hill	D.C.
Martin, Lee David	Mo.
Martin, Louis Nelson	Md.
Martin, Malcolm Alan	Md.
Martin, Marilyn James	D.C.
Martin, Martha Mercer	Va.
Martin, Norman Lawrence	Md.
Martin, Richard Lee	Ohio
Martin, Richard Reynolds	Mass.
A.B. 1953, Tufts University	
Martin, Robert Glen	Va.
Martin, Rubye Estelle	D.C.
B.S. 1956, Virginia State College	
Martin, Stephen Briggs	Vt.
A.B. 1954, Wesleyan University	
Martin, Veryl Patterson	D.C.
B.S. 1942, D. C. Teachers College	
A.M. 1954, New York University	
Martin, William Davis, Jr.	Ohio
B.S. 1956, Ohio State University	
Martin, William Hamilton	Wash.
B.S. 1957, University of Washington	
Martin, William R.	D.C.
B.S. 1951, Morgan State College	
Martin, William Robert	Md.
Martinell, Willie Mitchell	Pa.
Martinez, Doris Ann B.	D.C.
Martinez, Frank Nicholas	N.M.
Martinez, Janet Marie	D.C.
Martorano, Vincent John	D.C.
Martowicz, Edward Thomas	Ohio
Martufi, Pearl G. A.	D.C.
Marwick, Claire Sklaroff	D.C.
Masciocchi, Sara Marie	Pa.

Masison, Charles Joseph, Jr. Md.
B.S. 1954, Massachusetts Institute of Technology
Maska, Edwin Chester Mass.
B.S. 1953, University of Pennsylvania
Mason, Alan Davidson N.Y.
Mason, Francis St. Clair Va.
B.S. 1955, Madison College
Mason, Jacqueline Josephine D.C.
Mason, James Kent Mont.
Mason, Judith Marci D.C.
Mason, Norman Randolph, Jr. Va.
A.B. 1955, The George Washington University
Mason, Paul Joseph D.C.
A.B. 1953, Brooklyn College
A.M. 1954, Harvard University
Mason, Robert E., Jr. N.C.
A.B. 1956, University of North Carolina
Mason, Vincent Elmore D.C.
B.S. 1956, University of Maryland
Massa, Emiddio Pa.
Masse, Samson N.Y.
A.B. 1954, The George Washington University
Massengill, Hilda Grey N.C.
Massey, Anne Amelia Va.
Massey, John Curran D.C.
A.B. 1936, St. Mary's University
A.M. 1940, Catholic University of America
Massey, Lucille Cameron N.J.
Massie, Betty Kay Va.
Mast, Phillip Wonn D.C.
Masterson, James Edwin Ky.
B.S. 1952, Berea College
LL.B. 1956, The George Washington University
Mastrantonis, Constantine Leonidas Greece
A.B. in Govt. 1954, The George Washington University
Mastroni, Frank Joseph Pa.
Matacotta, Mario Italy
Matalavage, Ronald Peter Pa.
Matchett, Jane Avis Md.
Matera, Ralph Joseph D.C.
B.S. in P.E. 1946, A.M. in Ed. 1950, The George Washington University
Mather, William Allen Va.
B.S. 1956, University of Maryland
Matherson, George Percy Va.
Mathews, Floyd Francis Ill.
Mathis, Jacob Lenhardt, Jr. D.C.
A.B. 1957, University of California
Mathur, Krishen Dayal D.C.
B.S. 1944, M.S. 1947, Osmania University, India
A.M. in Govt. 1953, The George Washington University
Mathyer, Dorothy Johnetta Pa.
Matijasevic, Ivanva Jevtic Yugoslavia
Maton, Denise Odette D.C.
Maton, Gilbert Louis Va.
Matta, Bernard John D.C.
Matteucci, Albert Nev.
A.B. 1952, University of Nevada
Matthews, Joseph Oscar, Jr. Md.
A.B. 1954, St. Bonaventure University
Matthews, Marvin Floyd Texas
Matthews, Neely Forsyth Jones Va.
B.S.E. 1957, The George Washington University

Matthews, Patricia Ann Texas
Matthews, Reynold Judson Va.
Matthews, Robert George Va.
B. Ind. Design 1956, Pratt Institute
Matthews, Samuel Sheridan Va.
B.S. 1955, The George Washington University
Matthews, Velma Anderson Va.
B.S. 1935, Texas Technological College
Matthews, William Alexander Pa.
A.B. in Govt. 1956, The George Washington University
Matthews, William Bruce, Jr. D.C.
B.S. 1953, University of Maryland
Mattingly, Jane Gough Md.
A.M. 1931, St. Louis University
Mattis, Edward Joseph D.C.
Mattman, Alfred Gustav Fla.
B.S. 1957, Florida State University
Mattoon, Creighton Urlani Hawaii
A.B. 1954, Stanford University
Mattson, Melvin Earl Va.
B.S. 1951, U. S. Merchant Marine Academy
A.B. 1954, The George Washington University
Matula, Stephen Charles Pa.
Maupin, Grace Elaine D.C.
B.S. in Phar. 1954, The George Washington University
Maurer, Georgia Ann Va.
Maurer, Herbert Maurice N.Y.
Maurer, Pauline D.C.
A.B. 1941, Municipal University of Omaha
Maury, Priscilla Bunker Md.
Mautz, George Francis Pa.
B.C.E. 1957, Villanova University
Maxey, Maggie Blanch Va.
Maxson, Marjorie Lorene D.C.
Maxwell, Arthur James D.C.
May, Edgar Burton D.C.
A.B. 1952, A.M. 1953, University of Buffalo
May, Margaret E. Va.
May, Mary Stuart Va.
B.S. in Ed. 1933, Longwood College
May, Maurice Leon Md.
May, Miriam Elaine D.C.
Mayberry, Grant Elmer D.C.
A.B. in Govt. 1954, The George Washington University
Maydwell, David Evans N.Y.
B.B.A. 1951, University of Miami
Mayer, Gloria Hensler Ky.
B.S. in Comm. 1954, University of Kentucky
Mayer, Jacob William Ky.
B.S. 1954, LL.B. 1957, University of Kentucky
Mayer, Joseph Emanuel D.C.
B.B.A. 1955, University of Wisconsin
LL.B. 1957, Georgetown University
Mayer, Marcia Gregg N.Y.
Mayer, Marianne Pa.
Mayer, Matilda J. D.C.
Mayer, Robert Marx N.Y.
A.B. 1957, West Virginia University
Mayer, Stanley D.C.
Mayes, Mary Alethia Md.
Mayewsky, Volodymyr D.C.
B.S. 1957, Drexel Institute of Technology

Maynard, Olivia Benedict Va.
Mayne, Carolyn Mae Va.
Mayo, Charlie Tilman D.C.
A.B. 1949, Atlantic Christian College
Mayo, Henry Casabianca Va.
Mayolo, Albert Salvatore Va.
B.B.A. 1953, College of the City of New York
Mayolo, Frank Louis D.C.
A.B. in Govt. 1955, The George Washington University
Mayo-Wells, Wilfrid James D.C.
B.E.E. 1952, The George Washington University
Mayrbaurl, Ronald Max N.Y.
B.C.E. 1953, Cooper Union
M.S. in C.E. 1954, Lehigh University
Mays, Charles Andrew Md.
Mayse, Frances Stewart Va.
Mayson, Preston Brooks, Jr. D.C.
B.S. 1955, U. S. Military Academy
Mazella, Samuel Frank N.J.
A.B. 1957, Cornell University
Mazzitti, Italo Carmine D.C.
McAfee, Ruth Edith D.C.
McAlister, DeFreese Johnson Ala.
A.B. 1953, Birmingham Southern College
McAllister, Charles Joseph, Jr. Md.
McAllister, Joseph Regis Md.
McAnallen, Frances Gloria Md.
McAninch, Frank Ross Va.
McAuliffe, Francis Adam Md.
B.S. 1957, University of Maryland
McAuliffe, Margaret Elizabeth Va.
McAusland, Douglas George Va.
B.B.A. 1957, University of Wisconsin
McAvoy, Chisolm Clifford Va.
B.S.in P.E. 1956, The George Washington University
McAweeney, William Joseph Mass.
A.B. 1955, Providence College
McBrayer, Martha Ann N.C.
A.B. 1957, University of North Carolina
McBride, Mary Ethel Ill.
B.S. in Com. 1957, St. Louis University
McCabe, LeRoy Burton Md.
McCabe, Lyle Bernard Calif.
McCaffrey, William Theodore Va.
B.S. in C.E. 1935, Tri-State College
B.S.E. 1937, University of Michigan
M.C.E. 1942, Polytechnic Institute of Brooklyn
McCahan, Albert LeRoy D.C.
McCallion, Shirley Ann Va.
McCallum, Charles Phillip, Jr. Md.
B.S. 1949, U.S. Naval Academy
McCallum, Robert Bruce Conn.
McCament, Harry Daily, Jr. Va.
McCandless, Donald Carson Md.
A.B. 1943, Wesleyan University
McCandless, Robert Cecil Okla.
McCandlish, Harrison Eugene Va.
B.M.E. 1952, Polytechnic Institute of Brooklyn
McCann, Mary Joanne Pa.
A.B. 1956, Seton Hill College
McCann, Robert Thomas Md.
B.E.E. 1951, The George Washington University
McCann, Theodore Robert Mich.

McCardell, Joseph Martin
McCarren, Charles Edward
McCarren, Edith Alice
A.B. 1951, Juniata College
McCarthy, Charles James
McCarthy, Donald Joseph
McCarthy, Dorsey
McCarthy, John Ernest
McCarthy, Margaret Martin
McCaulley, Donald Francis
A.B. 1950, University of Pennsylvania
McCeney, Paul James
McChesney, Donald Wallace
McClain, Philip Wade
McClannan, Quinton Bonney
McClean, Robert Earl
A.B. 1937, University of California at Los Angeles
McClellan, Thomas Allen
• McClelland, James Patterson
A.B. 1927, Syracuse University
McCloughan, David Wesley
McClow, Peggy Eloise
McClure, Helen Pearl
A.B. 1934, Newcomb College
McClure, John Alexander
A.B. 1956, The George Washington University
McClure, John Robert
McClure, Lyn
McClymond, James Martin
McConchie, Lillian Marie
McConkey, Audrey Marie
McConnel, Murray, Jr.
McConnell, Richard D.
B.C.E. 1950, The George Washington University
McCool, Thomas Eugene
McCord, Douglas H.
McCormack, George Robertson
McCormack, James Francis
McCormack, John Joseph, Jr.
McCormick, Arthur J., Jr.
A.B. 1950, King's College
McCormick, Marian Louise
McCowin, Tius Walter
B.S. 1949, Utah State Agricultural College
McCoy, Anne Pearce
A.B. 1949, Wilson College, Pa.
McCracken, Mary Louise
McCrary, Korene Lillie
McCray, Wilson Francis, Jr.
McCubbin, James Melvin
McCullough, James Matthew
B.S. 1951, M.S. 1952, Pennsylvania State University
McCullough, Richard Cornwell
A.B. in Ed. 1955, The George Washington University
McDade, James Wright
A.B. in Govt. 1949, The George Washington University
LL.B. 1954, National University
McDaniel, Edgar Roland
B.S. in Ind. Eng. 1940, Virginia Polytechnic Institute
McDaniel, Frank
B.S. 1952, South Carolina State College
McDaniel, Haynes A., Jr.
McDaniel, Jeannette
B.S. 1954, D. C. Teachers College

McDaniel, Loreen Webb	Va.
McDaniel, Roland Edward	Md.
McDermott, Edwin Floyd	Ohio
A.B. 1957, Denison University	
McDermott, Francis James	Va.
McDermott, Patricia	D.C.
McDevitt, Azile Rita	Va.
McDonald, Deana Arlene	D.C.
McDonald, Duncan Keith	D.C.
A.B. 1950, Williams College	
McDonald, George, Jr.	D.C.
A.B. 1951, Sacramento State College	
McDonald, Howard Victor	W.Va.
McDonald, James Kenneth	Va.
A.B. 1954, Yale University	
McDonald, Malcolm Theodore	Va.
A.B. 1952, University of North Carolina	
McDonald, Margaret	S.D.
A.B. in Govt. 1946, The George Washington University	
McDonald, Margaret Anne	Md.
McDonald, Patricia Edwards	Va.
McDonald, Ronald Fisher, Jr.	Md.
A.B. 1955, University of Maryland	
McDonald, Thomas Joseph	Va.
McDonald, William Franklin	Md.
McDonnell, Alexander Patrick	N.Y.
McDonnell, John Moredach	N.Y.
McDowell, Sandra Kay	Pa.
McDowell, William Woods, Jr.	D.C.
B.E. 1953, Johns Hopkins University	
McEachen, Angus Dougald	Calif.
B.S. 1956, U. S. Naval Academy	
McEachran, Angus Gibbons, Jr.	Tenn.
McEllroy, Marcia Lynne	D.C.
McElroy, Clinton Eugene	N.C.
McElroy, William Lewis	Ala.
A.B. 1940, LL.B. 1942, University of Alabama	
McEniry, Mary Alice	Va.
B.S. 1942, University of Alabama	
McElwaney, Matthew Kenneth	Va.
A.B. 1954, Thiel College	
McFadden, Max Wulfsohn	N.Y.
McFarland, Frank A.	Va.
McFeeley, Margaret Ellen	D.C.
McFeely, Blake Hopper	Md.
A.B. 1948, Yale University	
McGann, John Joseph, Jr.	N.Y.
B.S. 1941, Queens College	
M.S. 1956, The George Washington University	
McGann, Marlene Beverly	S.D.
B.S. 1950, Augustana College	
McGann, Raymond George	Md.
McGarry, Elizabeth Ann	Md.
McGavin, Paul Peter	Md.
B.S. in I.E. 1952, Lehigh University	
McGavock, Edel Therrel	Va.
McGee, Joseph Vincent	Va.
McGehee, Ronald Dexter	D.C.
McGill, Elizabeth Louise	D.C.
B.S. 1946, D. C. Teachers College	
A.M. 1953, Catholic University of America	
McGill, James Augustus, Jr.	Va.
B.S. in C.E. 1956, University of Maryland	
McGill, Mary Louise	Va.
McGoldrick, Patricia Leilani	Md.
McGoodwin, Constance Anne	D.C.
McGough, Thomas Francis	Va.
McGovern, Phyllis Maureen	N.Y.
McGowan, James Joseph, Jr.	Va.
McGowan, Richard John	Mass.
A.B. 1956, Georgetown University	
McGrath, Gerald Richard	Pa.
A.B. 1954, King's College	
McGrath, James Henry III	D.C.
A.B. 1957, University of Virginia	
McGrath, Mabel Leahy	N.Y.
McGrath, Margaret M.	D.C.
McGrath, Michael Patrick	D.C.
McGrath, Thomas Michael	Va.
McGroarty, Eleanore Joan	N.Y.
A.B. 1956, Rosemont College	
McGuchin, James F.	Pa.
B.S. 1952, Lehigh University	
McGuire, Francis Donald	N J.
A.B. 1957, New York University	
McGuire, George Benedict	Ill.
B.S. in E.E. 1949, Louisiana State University	
McGuire, James Edward	D.C.
McGuire, Patrick Edward	D.C.
McGuire, William Francis	D.C.
A.B. 1949, Catholic University of America	
McHale, Margaret M.	Pa.
McHaney, Joe Cornelius	D.C.
A.B. 1935, Texas Agricultural and Mechanical College	
McHenry, William George	Md.
McHenry, William Parke, Jr.	D.C.
A.B. in Govt. 1956, The George Washington University	
McHugh, John Richard	Md.
McIlwaine, Parke Galusha	Va.
A.B. 1955, B.S. 1956, Hampden-Sydney College	
McInerney, Philip Michael	Md.
McInteer, Sarah Madeline	D.C.
McIntosh, David Foreman, Jr.	Pa.
B.S. 1952, U. S. Coast Guard Academy	
McIntosh, Marion Shields	D.C.
B.S. 1942, Hampton Institute	
A.M. 1956, New York University	
McIntosh, Thomas Elmer	D.C.
McIntosh, Theodore William	Md.
B.E. 1951, Johns Hopkins University	
McIntyre, Joseph Charles	Md.
B.S. 1949, M.S. 1953, Georgetown University	
McIntyre, William Mullins	D.C.
McKamey, William	Md.
B.S. 1953, East Tennessee State College	
McKay, Charliss Helen	Va.
McKay, Donald	Mass.
A.B. 1955, Harvard University	
McKay, Patrick George	Mass.
A.B. 1952, Harvard University	
McKay, Rachel Ruth	D.C.
B.S. in Ed. 1943, Pennsylvania State University	
McKay, Victor Irving	D.C.
McKean, Ann B.	D.C.
A.B. 1920, Nebraska State Teachers College, Chadron	
A.M. 1921, Columbia University	
McKean, Wilbur Eugene	Va.
B.S. in B.A. 1953, Elizabethtown College	
McKean, William John	Va.

N.Y.
McKechnie, Douglas Robert
B.M.E. 1953, Rensselaer Polytechnic
Institute Kans.
McKee, John Norman Va.
McKee, Margaret Mary Md.
McKee, Theodore Roosevelt, Jr. N.Y.
McKeever, James Joseph
B.S. 1950, Fordham University Calif.
McKeever, Suzanne Woodlief Va.
McKelvey, Jon Katherine Va.
McKelvie, Andrew Robert
A.B. 1936, St. Vincent College Colo.
McKenzie, Amelia Elaine Va.
McKenzie, Bonnie Woodbury Md.
McKenzie, Leo Edward Va.
McKenzie, Michael Edward D.C.
McKeown, Sheila Lee Va.
McKeown, William Leigh S.C.
McKibben, Elizabeth Ann
B.S. 1957, University of South Carolina Okla.
McKinley, John C.
B.S. 1955, Colorado Agricultural and
Mechanical College Md.
McKinney, Diana Whitley D.C.
McKinney, Frederick
A.B. 1949, Howard University Tenn.
McKinney, John Rosamond
A.B. 1956, Southwestern State College D.C.
McKnight, Carolyn Ione D.C.
McKnight, Michael J.
A.B. 1950, The George Washington
University D.C.
McKnight, Vastie Gerelene
B.S. 1952, North Carolina State Teachers
College, Fayetteville D.C.
McLain, Raymond Aubrey Va.
McLane, Johnnie Edward Md.
McLaughlin, Edward Manus, Jr.
A.B. 1955, King's College D.C.
McLaughlin, George H. D.C.
McLaughlin, Helen
A.B. 1922, Northwestern University
J.D. 1932, Southwestern University D.C.
McLaughlin, James Joseph D.C.
McLaughlin, John Lindsay
A.B. 1941, Drake University D.C.
McLaughlin, Joseph Donald, Jr. Md.
McLaughlin, Mary MacMillan
A.B. 1956, The George Washington
University D.C.
McLaughlin, William Lowndes
B.S. 1949, Hampden-Sydney College D.C.
McLendon, Preston Alexander, Jr.
A.B. 1951, Duke University Md.
McLeod, Don Evans
A.B. 1957, Duke University Vt.
McLeod, Elizabeth Joan
A.B. 1956, Boston University Md.
McLoughlin, Gerard Thomas
A.B. 1948, Brooklyn College
A.M. 1953, New York University Fla.
McMahan, Joan Dennie D.C.
McMahill, Kenneth Leigh D.C.
McMahon, Helen Elizabeth
B.S. 1947, Ed.M. 1952, University of
Maryland Va.
McMahon, John Joseph III
A.B. 1955, University of Notre Dame Md.
McMahon, Thomas Anthony
A.B. in Govt. 1951, The George
Washington University N.C.
McMeans, Kenneth Dale

D.C.
McMeekin, Alphonso Lorenzo
B.S. 1938, Florida Agricultural and
Mechanical University
M.S. 1941, Michigan State University
Ph.D. 1956, Rutgers University Va.
McMillan, Arlin Thomas
A.B. 1949, William Jewell College Md.
McMillan, Carl Henry, Jr.
A.B. 1952, A.M. 1953, Yale University N.C.
McMillan, Douglas Monroe Md.
McMille, Donald Carl Pa.
McMillin, Harvey Scott, Jr.
A.B. 1956, Princeton University D.C.
McMorris, Lynne Stanley D.C.
McMorrow, Robert Donald Ohio
McMurrin, Dwight James Va.
McNab, Hugh John D.C.
McNair, Roy Perrin III Va.
McNall, Joe Dale Va.
McNamara, Thomas Neal
A.B. 1952, Duke University D.C.
McNamee, John Paul Pa.
McNeelege, Hugh Eugene Pa.
McNeelege, Mary Patricia N.C.
McNeely, Gibbon Elliott
B.S. 1950, University of North Carolina D.C.
McNeil, James Francis D.C.
McNeil, Mary Chilton D.C.
McNeill, Lula L.
B.S. 1943, Howard University D.C.
McNelis, David Patrick
B.S. 1951, Pennsylvania State University Pa.
McNelis, Donald Thomas
B.S. 1957, Pennsylvania State Teachers
College, Bloomsburg Md.
McNelis, John Joseph
B.S. 1951, University of Scranton Ohio
McNenny, James Hunter
A.B. 1956, Miami University D.C.
McNett, John Phillip Md.
McNish, John William Va.
McNulty, Paul Edmund
A.B. 1952, The George Washington
University Va.
McPherson, Marian Louise Ga.
McPherson, Owen Spencer
B.S. in E.E. 1952, Agricultural and
Technical College of North Carolina Va.
McPherson, Robert Alexander, Jr. Md.
McQuade, Anne D.C.
McQueary, John Maxwell Va.
McRay, Harold Gordon Md.
McShulskis, John Edward Va.
McSurdy, Charles Earl D.C.
McVay, Marion Elizabeth Ind.
McWright, Cornelius Glen
A.B. 1952, Evansville College N.J.
Mead, Robert Henri Mich.
Mead, Timothy Dean Va.
Meade, David Everard
A.B. 1956, Williams College Md.
Meade, Roger Frederick Va.
Meade, William Spencer Va.
Meadows, Aldeen Burton
A.B. 1956, Mary Washington College Va.
Meadows, Charles Franklin Va.
Meadows, Merlin Gilven
A.B. 1957, Marshall College D.C.
Means, Bracy Edward Nebr.
Means, Cecil Paul
A.B. 1957, University of Nebraska

Means, Edward Douglas, Jr. D.C.
A.B. 1953, Duke University
Meares, Claude Wellington III D.C.
Measel, Sarah Lou Va.
Mebane, Banks Holt Md.
B.S. 1949, University of North Carolina
M.S. 1953, The George Washington University
Mecca, Christyna Emma Md.
Mecham, Leonidas Ralph Utah
B.S. 1951, University of Utah
Mechem, Patrick Harry Va.
Mecklenburg, Richard Kenneth Va.
B.S. in M.E. 1957, University of Iowa
Medeines, Daniel P. Va.
B.C.E. 1956, Rensselaer Polytechnic Institute
Medeiros, Thomas E. Mass.
B.B.A. 1955, University of Miami
Medina, William Antonio Md.
A.B. 1957, The George Washington University
Medley, Martin Luke, Jr. Tenn.
Medlicott, William Jay Md.
Meehan, Robert Michael Md.
Meehean, Mildred Madeline Va.
B.S. 1926, University of Minnesota
Meek, Orville Marcellious, Jr. Va.
Meeks, Alfred Crowder D.C.
Meeks, Anna Ruth Md.
A.B. 1926, Goucher College
Ed.M. 1947, University of Maryland
Meeks, Leslie Franklin D.C.
A.B. 1949, Howard University
M.S. in L.S. 1956, Catholic University of America
Meers, Josephine Marie Ind.
A.B. 1956, The George Washington University
Megill, Bertel Robert D.C.
Megill, Harry Newlins, Jr. D.C.
Megley, Richard Burns Mass.
B.S. in M.E. 1957, Rensselaer Polytechnic Institute
Mehr, Milton Samuel D.C.
B.C.E. 1951, Rensselaer Polytechnic Institute
Mehta, Shiv D.C.
A.B. 1957, Delhi University, India
Meidunas, Alger Peter Md.
Meier, Morton Warnock D.C.
Meihls, Archie Bernard, Jr. Va.
A.B. 1946, San Diego State College
Meisburger, Edward Paul Mo.
Meiselman, Sumner Va.
B.S. in M.E. 1940, Worcester Polytechnic Institute
Meisinger, Marie L. Va.
Meissner, Mary Ann Va.
Meissner, Paul Md.
B.E.E. 1951, The George Washington University
Meister, Albert Rudolph Va.
Meister, Malcolm N.Y.
D.D.S. 1955, New York University
Mejia, Edwin Antonio D.C.
Melcher, Larry Richard Nev.
Mellado, Ramon Antonio Puerto Rico
A.B. 1955, University of Puerto Rico
Mellander, Gustavo Adolfo Calif.
Meller, Michael Nicholas Va.
B.Ch.E. 1957, Pratt Institute

Mellor, William Herbert, Jr. D.C.
Melton, Ronald Hope Md.
Meltzer, Arnold Charles D.C.
Meluzin, Sylvia Ann D.C.
Menakongka, Brapandh D.C.
Menard, Donald John D.C.
Mencher, Bruce Stephen D.C.
A.B. in Govt. 1957, The George Washington University
Mende, Gilbert Hancock Va.
Mendell, Patricia Anne Va.
Mendelsohn, Eric Stuart D.C.
Mendelson, Martha Holstein Md.
B.S. 1933, University of Pennsylvania
Mendelson, Rhona Elaine D.C.
Menge, George Henry Va.
Menzer, Elizabeth Anne Va.
Menzer, Herman Richard D.C.
Merat, Farokh Iran
Mercado, Iris D.C.
B.S. 1952, University of Puerto Rico
Mercer, Abbie Belle Fla.
Mercer, Barbara Marie D.C.
Mercer, Ernest Bernard D.C.
B.S. 1942, D. C. Teachers College
Mercer, Fred Va.
Mercer, Margaret D.C.
A.B. 1929, M.S. 1934, Ph.D. 1938, Pennsylvania State University
Mercer, William, Jr. Md.
B.S. 1955, Morgan State College
Merchant, Anne Phyllis Mass.
A.B. 1956, Rosemont College
Merciez, Walter Ronald Colo.
Mercker, Rodney Clark D.C.
B.S. 1951, Michigan State University
Merelman, Richard Murnick D.C.
Merkler, Norman Lowell Md.
A.B. 1956, The George Washington University
Mermel, John Frederick D.C.
B.S. 1956, Georgetown University
Merrigan, Lawrence James Va.
B.S. in C.E. 1955, University of Kansas
Merrill, Celine White D.C.
Merrill, Robert Lee D.C.
Merring, Leroy Lawrence Wyo.
A.B. 1956, Catholic University of America
Merritt, Harrieton Lionel Md.
A.B. 1949, Glenville State College
Merrow, Dorothy Evelyn Va.
Mertz, Richard Rolland Va.
Ph.B. 1946, B.S. 1948, A.M. 1953, University of Chicago
Merz, Allen Clay Wash.
Mesirow, June Elinor Md.
Mesmer, Jerry Morton Md.
Messick, Vernon Delaney Va.
Messner, Dorothy Mary Calif.
Messner, Howard Myron N.J.
Meszards, George Kadocsa D.C.
Metcalf, James Phelan D.C.
A.B. 1952, Roosevelt University
Metcalf, Jessie Gasch Md.
A.B. 1932, Hastings College
M.S. 1935, Boston College
Metelsky, John Conn.
Metheny, Delmar D. Kans.
B.S. 1956, Fort Hays Kansas State College
Methvin, John Paul D.C.

Metoxin, Yvonne Kay Pa.
Metro, Stuart David D.C.
Metz, Charles Thomas D.C.
Metzel, Elizabeth Cone D.C.
Metzger, Eric E. N.Y.
B.S. 1951, Queens College
Meyberg, William Braxton Va.
B.S.E. 1954, Virginia Polytechnic Institute
Meyding, George Daniel Md.
B.S. 1956, Georgetown University
Meyer, Ardo Xamar Nebr.
Meyerovitch, Clara Kay Md.
Meyers, Barton Paul D.C.
Meyers, Catherine Ann D.C.
Meyers, Paul Frank, Jr. Md.
Meyers, Stanley Elliott N.Y.
A.B. 1956, Brooklyn College
Mezines, Diana N.J.
Mezo, Peter Md.
Miceli, Anthony Matthew N.Y.
B.S. 1954, Wagner Lutheran College
Mich, Alex, Jr. D.C.
B.S. in Ch.E. and Met.E. 1949, University of Michigan
Michaelis, Milton Md.
Michaels, Richard Morton Md.
B.S. 1949, Bates College
A.M. 1953, The George Washington University
Michaelson, I. Arthur N.Y.
A.B. 1950, New York University
M.S. 1955, University of Cincinnati
Michaelson, Ruth G. Mich.
A.B. in Govt. 1944, The George Washington University
Michal, Jaromir Joseph D.C.
Michaux, William Whitehead Va.
A.B. 1939, University of North Carolina
M.Litt. 1949, University of Pittsburgh
Ph.D. 1952, Duke University
Michels, John Francis, Jr. Va.
B.S. in M.E. 1953, University of Pennsylvania
Michelsen, Paul Frederick Md.
B.E.E. 1953, The George Washington University
Michelson, Aaron Md.
A.B. 1938, New York University
Michelson, Kathleen Adair Va.
Michener, Guy L. Iowa
A.B. 1927, William Penn College
A.M. 1937, University of Iowa
Mickelson, Ruth Mae D.C.
Micko, Helen Louise Pa.
Middlebrooks, Thomas Alwyn Md.
Midkiff, Charles Robert, Jr. Md.
Mighell, Alan Donald Md.
B.S. 1957, The George Washington University
Mignone, Phyllis N.Y.
A.B. 1957, The George Washington University
Mihlon, Lawrence Frank N.J.
Mika, Paul John Mass.
A.B. 1953, University of Pittsburgh
Mikelis, Roxy M. Md.
Mikulka, Mary Helen D.C.
Mikus, Isabelle Mary D.C.
B.S. 1946, Simmons College
Milano, Dominick Joseph Md.
Milbradt, Eugene David Va.

Milburn, Donald Patrick D.C.
Milenz, Margarete Helene D.C.
Miles, James Russell, Jr. Md.
Miles, Joshua Weldon Md.
A.B. 1956, Yale University
Miles, Lavern Ray Va.
Miles, Nelle Huddleston Va.
B.S. 1926, Ohio State University
A.M. in Ed. 1957, The George Washington University
Miles, Wallis Ralph Md.
Miles, Warren Harding Va.
Miles, Wilson Ashley Md.
B.S. 1957, University of Maryland
Mileto, Dominica Anne Md.
A.B. 1956, Hood College
Miley, Roberta Va.
Milikin, Orin Thomas Ga.
Millar, David Richard Md.
Millar, Russell Ward, Jr. Md.
A.B. 1950, University of California
A.M. 1956, The George Washington University
Millard, James Judson Va.
B.S. 1953, Georgetown University
Millen, Irwin William Va.
B.S. 1950, Massachusetts Institute of Technology
Miller, Alden Hamilton Wash.
B.S. 1956, State College of Washington
Miller, Allen Howard Va.
Miller, Alvin D.C.
Miller, Betty Lou D.C.
Miller, Bradford William, Jr. N.Y.
A.B. 1954, New York State Teachers College, Albany
Miller, Carol Lee D.C.
Miller, Carol Lee Md.
Miller, Clair Richard Ala.
B.S. 1950, Ohio State University
M.B.A. 1953, University of Michigan
Miller, Clark Jerome Maine
A.B. 1954, University of New Hampshire
Miller, Donald Floyd D.C.
A.B. 1954, A.M. 1957, New York State College for Teachers
Miller, Doris Elaine D.C.
A.B. 1940, University of Minnesota
Miller, Edwin Allan D.C.
Mus.B. 1952, Westminster Choir College
Miller, Eldon Stiles, Jr. Kans.
Miller, Forrest Leonard, Jr. D.C.
Miller, Francis Eugene Va.
Miller, Francis Fabian, Jr. Md.
B.S. 1952, University of Maryland
Miller, George Edward D.C.
Miller, George Francis Va.
Miller, Gustava Louise Md.
A.B. 1952, Catholic University of America
A.M. 1956, University of Maryland
Miller, Harold Klingman Md.
B.S. 1945, Pennsylvania State University
Miller, Harry, Jr. Md.
B.S. 1955, Washington Missionary College
Miller, Harvey Freeman, Jr. N.Y.
Miller, Helen Zarkower Md.
Miller, Iler Monroe Ga.

Miller, Imelda Chavez	D.C.
Miller, Jack Wessel	D.C.
Miller, James Allen	Md.
B.A.E. 1951, New York University	
Miller, James Elger	Md.
B.S. 1956, University of Maryland	
Miller, Jay Howard, Jr.	Md.
B.S. 1957, The George Washington University	
Miller, Jeannine Delores	D.C.
Miller, Jerald Lee	Mich.
Miller, John Franklin	Va.
B.E.E. 1955, University of Florida	
Miller, John Richard	Md.
Miller, Joseph Adolph	Md.
Miller, Joseph Albert	Md.
B.S. 1951, University of Scranton	
Miller, Katherine Bovard	D.C.
B.S. in Ed. 1945, Pennsylvania State University	
Mus.B. 1949, Westminster Choir College	
Miller, Lawrence James	Va.
Miller, Leon Herman, Jr.	D.C.
B.S. in M.E. 1953, M.S. in I.E. 1957, Purdue University	
Miller, Leonard Jay	D.C.
B.S. 1957, Lowell Technical Institute	
Miller, Lois Edith	Md.
B.S. 1944, College of Medical Evangelists	
Miller, Louis LaRue	Va.
B.S. 1930, University of Kansas	
A.M. 1931, University of Michigan	
Miller, Malcolm Drennan	Va.
A.B. 1931, Grinnell College	
LL.B. 1935, Georgetown University	
Miller, Manley Albert	Va.
A.B. 1957, Emory and Henry College	
Miller, Margaret Elizabeth	Md.
A.B. 1948, Bryn Mawr College	
A.M. in Ed. 1954, The George Washington University	
Miller, Marilyn Jo	Va.
Miller, Martha Ann	Pa.
A.B. 1952, Rosemont College	
B.S. 1953, Carnegie Institute of Technology	
Miller, Martin Richard	Va.
Miller, Meredith Ann	Va.
A.B. 1955, Hofstra College	
Miller, Morton Stockdale	Md.
A.B. 1953, Swarthmore College	
Miller, Nan Denise	D.C.
Miller Nancy Louise	Md.
Miller, Nancy Yvonne	D.C.
Miller, Oakley Bloy	Pa.
A.B. 1949, Union College	
M.S. 1954, University of Delaware	
Miller, Orville Burt, Jr.	D.C.
Miller, Paul Hobart	Va.
A.B. 1946, University of Iowa	
Miller, Phyllis Lynn	D.C.
Miller, Richard George	Md.
Miller, Robert Boyd	D.C.
A.B. 1957, Houghton College	
Miller, Robert Burns	Ind.
A.B. 1930, Earlham College	
Miller, Robert Dean	Va.
Miller, Robert Howsion	D.C.
Miller, Robert Jay	D.C.
B.S. 1957, Pennsylvania State University	
Miller, Robert Lawrence	D.C.
Miller, Robert Leland	D.C.
Miller, Robert Michael	Va.
Miller, Robert Theodore	Md.
B.S. 1951, Columbia University	
Miller, Roy	D.C.
B.S. in M.E. 1956, University of Washington	
Miller, Ruth Wanda	D.C.
Miller, Shiela Marie	Va.
A.B. 1953, Beaver College	
Miller, Thomas Edward	Wash.
Miller, Virginia Grohs	D.C.
B.S. 1954, D. C. Teachers College	
A.M. in Ed.1957, The George Washington University	
Miller, Walter Clarence	Pa.
A.B. 1951, Pennsylvania State University	
LL.B. 1956, The George Washington University	
Miller, Walter M. K.	Iowa
Miller, William Charles	Md.
A.B. 1953, University of Maryland	
Milliken, John Rowe	N.C.
A.B. 1952, University of North Carolina	
Milliken, Rankin Allen	Mass.
B.S. in E.E. 1950, Northeastern University	
Millington, William C.	Va.
Million, Gordon Washburn	Colo.
B.S. in C.E. 1957, University of Denver	
Mills, Doris Jane	Ky.
Mills, Florence May	Ala.
B.S. 1950, Alabama Agricultural and Mechanical College	
Mills, George F.	Md.
A.B. 1954, The George Washington University	
Mills, Howard M.	Va.
Mills, James Edward, Jr.	D.C.
Mills, James Moses	D.C.
Mills, John Lamar	Va.
Mills, Katharine Jayne	D.C.
A.B. 1950, The George Washington University	
Mills, Mable G.	D.C.
B.S. 1942, South Carolina State College	
Mills, Margaret Mary	Pa.
Mills, Marilyn Ray	D.C.
A.B. in Ed. 1957, The George Washington University	
Mills, Scott A.	Va.
A.B. 1947, Grinnell College	
A.M. 1948, School of Advanced International Studies	
Milne, J. Scott, Jr.	D.C.
Milstead, Kenneth L., Jr.	Md.
Milster, Benton Albert	Va.
Milzman, Joseph Baer	D.C.
Min, Byong Joon	Korea
Min, Sherman Lee-Soo	D.C.
Minami, Warren Nori	D.C.
Mindel, Eugene David	D.C.
B.S. 1956, University of Maryland	
Miner, Charles Edward, Jr.	Fla.
B.S. 1955, Florida State University	
Miner, Sherman Leman	Va.
B.S. in B.A. 1941, Kent State College	
Minick, Peter Daniel	Mo.

Minkin, Burton Roy A.B. in Govt, 1957, The George Washington University	Maine
Minor, Helen Louise B.S. 1955, North Carolina State Teachers College, Fayetteville	Va.
Minor, Robert Center A.B. in Govt. 1952, The George Washington University	Md.
Minster, Allan Barnett	D.C.
Minthorn, Katherine Lavelle	Oreg.
Mion, John Henry B.S. in E.E. 1952, Rutgers University	N.J.
Miotto, Bruno E. Luigi	D.C.
Mish, William Hammond	Md.
Miskin, Leon	D.C.
Mitchell, Ann Glick A.B. 1951, University of Washington	Va.
Mitchell, Ann Katherine Leilehua	Va.
Mitchell, Arthur Ray A.B. in Ed. 1954, The George Washington University	Va.
Mitchell, Bernon Ferguson B.S. 1957, Stanford University	Calif.
Mitchell, Charles Reese B.S. 1951, University of Alabama	Ala.
Mitchell, David Alan A.B. 1956, University of Virginia	D.C.
Mitchell, Donald R. B.S. in Ind. Eng. 1950, Pennsylvania State University	Va.
Mitchell, Edward Franklin B.S. in E.E. 1956, University of Virginia	Va.
Mitchell, Elisabeth Ann	D.C.
Mitchell, Elsie Colston B.S. 1951, D. C. Teachers College	D.C.
Mitchell, George Hunt, Jr. B.S. 1954, Washington and Lee University	Md.
Mitchell, Jeanne Croswell A.B. 1957, Northwestern University	Md.
Mitchell, Julia Allen A.B. 1941, Spelman College	D.C.
Mitchell, Julius Donald, Jr.	Md.
Mitchell, Marie Raleigh A.B. 1942, Mildlebury College	D.C.
Mitchell, Martha Jane	D.C.
Mitchell, Martin William	D.C.
Mitchell, Mary Alice B.S. 1952, Alabama Agricultural and Mechanical College	D.C.
Mitchell, Nancy Carolyn	Md.
Mitchell, Norma Jean A.B. 1950, Augustana College	Va.
Mitchell, Rebecca White	Va.
Mitchell, Robert Gibbs B.S.E. 1952, University of Michigan	Mich.
Mitchell, Roy Shaw B.S. 1957, Cornell University	N.Y.
Mitchell, Shirley Lucille	Md.
Mitchell, Vance F. B.S. 1957, University of Maryland	Fla.
Mitchell, Verna E.	D.C.
Mitchell, Walter J.	D.C.
Mitchener, Harold Jones B.S. 1936, Carnegie Institute of Technology	Pa.
Mitteldorf, Monroe	Texas
Miville, Charles Andrew	Md.
Mix, Margaret Clara	D.C.
Miyakawa, Tatsuo Arthur B.S. 1940, Harvard University	Calif.
Miyares, Marcelino Sotolongo Bachillerato 1955, Instituto de Marianao, Cuba	Cuba
Miyoshi, Masaya A.B. 1952, A.M. 1955, Waseda University, Japan	Japa
Mizansky, Jack	D.C.
Mize, William Raymond, Jr. A.B. 1954, Washington University	Ill.
Moan, Jeanne Corkhill A.B. 1935, Seton Hill College A.M. 1949, The George Washington University	Pa.
Mock, Robert Royden	Ill.
Mockenhaupt, Robert Raymond B.M.E. 1955, University of Minnesota	Minn.
Mocniak, Pearl Ann	D.C.
Modlin, Barry	D.C.
Modrak, George Paul	Pa.
Moeller, Charles James A.B. 1954, Nebraska Wesleyan University	Nebr.
Moeller, William Joseph	Md.
Moerman, Constance Levenson	Md.
Moffat, Jane Kerin A.B. 1952, A.M. 1957, Oxford University, England	D.C.
Mohammed, Azizali Farrukh A.B. 1947, University of Bombay A.M. 1949, University of Sind	Pakista
Mohammed, Sayeed	British West Indi
Mohler, Stephen Charles	Va.
Mohseni, Mohammad Yassine	Afghanista
Moien, Joel Stanley	D.C.
Mojallal, Homa	D.C.
Mojica, Gilberto E. B.S. in C.E. 1953, The Citadel	D.C.
Mok, Carson Kwok-Chi B.S. in C.E. 1953, Chu Hai University, Hong Kong	D.C.
Mok, Perry Kwok-Ping B.S. in Eng. 1953, Chu Hai University, Hong Kong	D.C.
Moliski, Robert John B.S. 1950, Syracuse University	Va.
Moll, Edward Kuhlman A.B. 1955, Harvard University B.S. 1956, Massachusetts Institute of Technology	D.C.
Moll, Gene Skewis A.B. 1956, Wellesley College	D.C.
Moller, Theodore Harold B.S. 1949, Northeastern University	Md.
Molley, Arneta Frances B.S. 1938, D. C. Teachers College	D.C.
Mollohan, Jean	D.C.
Molloy, Judith Mary	D.C.
Moloney, John Bromley B.S. 1947, Tufts College M.S. 1953, The George Washington University	Min
Molz, Joseph Robert B.S. 1957, Franklin and Marshall College	Pa.
Momiyama, Thomas Sadahiko B.S. in M.E. 1957, Michigan College of Mining and Technology	Mich
Mon, George	D.C.
Monch, Alfredo	Md.

Moncrief, Frances Mae A.B. in Ed. 1956, University of North Carolina	D.C.
Monday, William Waldrop B.S. in M.E. 1956, Illinois Institute of Technology	Va.
Mondzac, Allen Mendel	Md.
Money, Maxwell Stow A.B. 1951, A.M. 1954, Stanford University	Calif.
Monish, Carol Ann	Va.
Monkiewicz, Chester John	Md.
Monroe, Leslie Joseph	Calif.
Monroe, Oswald Villard A.B. 1937, Howard University A.M. 1940, Columbia University	D.C.
Montague, Frances Arnold	Va.
Montague, Robert Martina, Jr.	D.C.
Montgomery, James Clifford	D.C.
Montgomery, Jeanette Noland	Va.
Montgomery, Mabel Maxwell B.S. 1942, Westminster College	Va.
Montgomery, Norma Carol	N.C.
Montgomery, Robert Anthony B.S. 1956, University of Dayton	Ky.
Montgomery, Robert Bruce B.S. 1955, University of Maryland	Pa.
Montgomery, Robert Hayes B.E.E. 1954, The George Washington University	D.C.
Montgomery, Shirley Genevieve	Md.
Montgomery, William Waymon	Va.
Moody, Horace Ray B.M.E. 1952, The George Washington University	Wash.
Moody, John Chrystor	Va.
Moody, Shirley Ardelia A.B. 1953, Morgan State College	Md.
Mooers, Richard Henry	Md.
Moon, Edward Miller A.B. 1938, Ohio Wesleyan University A.M. 1939, Ohio State University	D.C.
Mooney, Henry Francis A.B. 1955, Boston College	Mass.
Mooney, James J. LL.B. 1950, New York University	Va.
Mooney, Louise Swartz	Va.
Mooney, Philip Leavis A.B. 1951, Harvard University	Vt.
Moonilal, Rowland	British West Indies
Moore, Anine Ellen	Va.
Moore, Clara Alma A.B. 1926, Indiana University	Va.
Moore, Cora Elizabeth	Md.
Moore, David Lewis A.B. 1936, Harvard University LL.B. 1952, A.M. 1955, The George Washington University	N.Y.
Moore, Donald Willis	Va.
Moore, Doris Diggs B.S. 1940, D. C. Teachers College	D.C.
Moore, Dorothy Elizabeth A.B. 1947, University of Texas	Md.
Moore, Earl Kenneth A.B. in Govt. 1955, The George Washington University	Tenn.
Moore, Ellen Soden	Va.
Moore, Eric Ellis	Md.
Moore, Gerald Lee B.S. in E.E. 1953, Rose Polytechnic Institute	Md.
Moore, Henrietta Simpers	Ind.
Moore, Holmes Sumner A.B. 1949, University of California	Va.
Moore, Howard Nelson E.E. 1930, Cornell University LL.B. 1935, The George Washington University LL.M. 1936, S.J.D. 1938, Georgetown University	D.C.
Moore, Irene McManus	D.C.
Moore, Jacqueline Richards B.S. 1956, D. C. Teachers College	D.C.
Moore, James Reardon, Jr. B.S. 1957, The George Washington University	Va.
Moore, Jean Sadler A.B. 1947, Duke University	Md.
Moore, Jesse Lee A.B. in Govt. 1949, The George Washington University	D.C.
Moore, John Curtis A.B. 1954, University of Texas	Texas
Moore, John Drayton	D.C.
Moore, John Edward	Ind.
Moore, June Gaar	Va.
Moore, Martha Jean	Va.
Moore, Mary Elizabeth	D.C.
Moore, Mercedes Katherine B.S. 1934, A.M. 1950, University of Minnesota	Minn.
Moore, Patsy Cleon	D.C.
Moore, Ralph High	Va.
Moore, Raphael Barry B.S. 1953, University of Nebraska	Nebr.
Moore, Richard B.S. 1949, University of Missouri Ph.D. 1956, University of Rochester	D.C.
Moore, Richard Ernest B.M.E. 1957, University of Dayton	Ohio
Moore, Robert Daniel	Ky.
Moore, Robert George A.B. 1951, Brooklyn College	N.Y.
Moore, Robert Hugh	Va.
Moore, Robert Milton	Va.
Moore, Robert W. A.B. 1943, University of Chicago A.M. 1957, Tufts University	Va.
Moore, Rodger Meek B.S. 1952, LL.B. 1956, University of Utah	Utah
Moore, Roger Owen	Ohio
Moore, Sarah Frances	D.C.
Moore, Stewart Lemoine, Jr.	Md.
Moore, Thomas Gale A.B. 1957, The George Washington University	Md.
Moore, Thomas Wesley	Va.
Moore, Warren Edson	Va.
Moore, William Burket	Md.
Moore, Winter King, Jr.	D.C.
Moorhead, George Wegener A.B. 1928, Yale University LL.B. 1931, Harvard University	D.C.
Moorman, Mary Virginia	Okla.
Morales, Raymond Peter	Va.
Moran, Robert Francis	Va.
Moran, Winnifred Mary B.S. 1940, University of New Hampshire	N.H.
Moray, Sergi	D.C.
Morehouse, Harold Julian B.S. in E.E. 1938, University of Texas	Va.

Morehouse, Lucille Vivian D.C.
A.B. 1957, The George Washington University
Morenko, O. Dorothy Pa.
Moreno, John A. Va.
B.S. in E.E. 1930, U. S. Naval Academy
Moreno, Verone Rexroat N.M.
A.B. 1955, The George Washington University
Moretti, John, Jr. Va.
Moretz, Gary Fred D.C.
Morgan, Alice Susan D.C.
B.S. 1938, University of Maryland
A.M. in Ed. 1946, The George Washington University
Morgan, Barbara Woods D.C.
A.B. 1957, Vassar College
Morgan, Caroline Morton Va.
Morgan, Cora Ann D.C.
A.B. 1957, Ohio University
Morgan, Eleanor Humphrey D.C.
A.B. 1956, Oberlin College
Morgan, James Leroy D.C.
B.S., M.S. 1950, Bucknell University
Morgan, John Threston W.Va.
A.B. in Ed., B.S. in B.A. 1952, Shepard State College
Morgan, Patricia Ann D.C.
Morgan, Richard Leroy, Jr. Va.
Morgan, Richard Linn W.Va.
B.S. in Ed. 1952, West Virginia University
Morgan, Robert Stong Tenn.
Morgan, Ruth Murphy D.C.
B.S. 1954, West Virginia University
Morgan, Walter Albert D.C.
Morgan, William Abraham Texas
B.S. 1942, U. S. Naval Academy
Morgan, William Conrad Texas
Moriarty, Patrick J. Minn.
A.B. 1950, American International College
A.M. 1951, University of Minnesota
Moriarty, Paul Maurice Mass.
A.B. 1942, Columbia University
Morin, Armand Girard Md.
B.S. 1939, University of New Hampshire
Morin, Joseph Vernon D.C.
Morine, Rita Estelle Md.
A.B. 1957, Connecticut College
Moring, John Frederick Va.
B.S. in I.E. 1957, Virginia Polytechnic Institute
Moritz, Howard William Va.
Morledge, Thomas Edison Mont.
B.S. 1955, University of Arizona
Morley, Mary Jane Md.
Morlock, Harry Kenneth D.C.
A.B. 1950, B.E.E. 1956, The George Washington University
Morra, Guiseppe D.C.
Morrell, Roger Merritt N.Y.
B.S. 1950, Haverford College
M.D. 1954, The George Washington University
Morris, Alice B. Md.
Morris, Donald Henry Md.
Morris, Gerald Gamba Md.
Morris, Geraldine F. Conn.
B.S. 1954, St. Josephs College

Morris, James Philip
A.B. in Govt. 1950, The George Washington University
Morris, John Charles
B.M.E. 1952, North Carolina State College
Morris, John Michael
A.B. 1956, Indiana University
Morris, Joseph Warner
Morris, Lucille
Morris, Raymond S.
Morris, Ruth Hunt
A.B. 1949, Agnes Scott College
M.S. in L.S. 1952, Emory University
Morris, Virginia
Morris, Xenophon
Morrison, Herbert Dean
A.B. 1955, Principia College
Morrison, Lawrence Alexander
Morrison, Pauline D. Y.
Morrisson, Charles Wyntur
Morrow, Eleanor K.
B.S. 1929, Columbia University
Morrow, Walter Boyd, Jr.
Morry, Mary Rosella
Morse, Peter
A.B. 1957, Yale University
Morse, Wayne Allen, Jr.
B.S. in B.A. 1948, University of Kansas
M.S. in Ed. 1949, Kansas State Teachers College, Emporia
Mortensen, Glen Albert
B.S. in Ch.E. 1955, University of Idaho
Mortimer, Barbara S.
Mortimer, Roberta Denise
Morton, Herbert Charles
A.B. 1942, A.M. 1950, University of Minnesota
Morton, Leon Marchal
B.S. 1956, University of Maryland
Morton, Ralph Edward, Jr.
Morton, Robin MacGregor
Morton, Ruth Phillips
B.S. 1938, Longwood College
Mosél, Elaine Sigrid
Mosél, Eugenia Ross
Moseley, Judith Ramona
Moser, Ernest Cleveland
Moses, Edwin Davis
B.S. 1951, University of Georgia
Moses, Grace McLean
A.B. 1930, The George Washington University
Moses, Sara Lucretia
Mosher, Irene Pabo
A.B. 1939, New York University
A.M. 1940, Columbia University
Mosher, Paul Ray
B.Ch.E. 1938, College of the City of New York
Ch.E. 1940, Columbia University
Moskowitz, Jerome Daniel
B.S. in E.E. 1947, University of Michigan
Mosman, Kenneth Freeman
A.B., A.M. 1951, The George Washington University
Moss, Dolores Mae
Moss, Everett
Moss, Jerry Lynn

Moss, Ralph Howell S.C.
A.B. 1913, Mercer University
A.M. in Ed. 1930, The George Washington University
Moss, Reed L. Idaho
A.B. 1957, Brigham Young University
Mossin, Richard Edwin D.C.
Mossinghoff, Gerald Joseph D.C.
B.S. in E.E. 1957, St. Louis University
Motovich, Esau Md.
B.S. 1941, Pennsylvania State Teachers College, Indiana
A.M. 1956, Columbia University
Motsinger, Edward Arthur Va.
Motsinger, Vivia Thompson Va.
Motsko, Donald Russell Pa.
B.S. 1957, Pennsylvania State University
Mott, Alice Martin D.C.
A.B. 1956, College of William and Mary
Mott, Melicey Martin D.C.
Motyka, Faye Glee D.C.
Moucha, Louis Anton D.C.
B.S.E. 1950, University of Connecticut
M.S. in E.E. 1952, Lehigh University
Mould, Thomas Mathew Wis.
B.S. 1951, University of Wisconsin
Moulis, Edward Jean Va.
B.S. 1935, Southwestern Louisiana Institute
Moulton, Rodney Freaman S.D.
A.B. 1949, University of South Dakota
Moultrie, Sara Ellyn D.C.
A.B. 1933, West Virginia State College
Mouth, James Harry Texas
Moutoux, Katherine Jones Va.
A.B. 1931, University of Tennessee
Moy, Mable D.C.
Moyer, Charles Vincent Va.
Mozzone, Alfred John Md.
Muccino, Angelo Joseph Md.
B.S. 1948, Waynesburg College
Muchnick, Abraham Hershel Md.
Mudd, Frances Thompson Pa.
Mueller, Elizabeth Gene Ill.
A.B. 1957, Principia College
Mueller, Kunigunde Marie N.Y.
A.B. in Ed. 1954, The George Washington University
Mueller, Louis Frederick Va.
Mueller, Rita D.C.
Mugglin, Malcolm Gustave Va.
B.E.E. 1957, Rensselaer Polytechnic Institute
Muhlenberg, David Stoddard D.C.
A.B. 1951, Williams College
B.S. in M.E. 1952, Massachusetts Institute of Technology
Muhtasib, Ibrahim Rashid D.C.
A.B. 1954, American University of Beirut, Lebanon
Muir, Frederic Wilson Va.
B.S. 1938, U. S. Naval Academy
Muir, William Angus D.C.
Mulcahey, Francis Lawrence Md.
Mulcock, James Browning, Jr. N.M.
Muldoon, Robert Stephen Ill.
B.S. 1956, University of Notre Dame
Mulford, Roger Elton Va.
B.S. 1936, Cornell University

Mulholland, John Herbert Ill.
B.S. 1957, University of Illinois
Mulkey, Margaret Kimbrough Va.
B.S. in Ed. 1922, University of Virginia
Mulkey, William Alexander D.C.
B.M.E. 1957, The George Washington University
Mullally, John Joseph Md.
B.S. 1953, Georgetown University
Mullan, Daniel J. N.Y.
Mullane, Alice Donovan Md.
B.S. in H.E. 1934, New York State Teachers College, Buffalo
Mullen, Almareta Denmark D.C.
B.S. 1948, D. C. Teachers College
Mullen, Ann Connor Va.
A.B. 1952, San Francisco College for Women
Mullen, Robert Spencer D.C.
B.S. 1951, D. C. Teachers College
Muller, Bruce Chadwick Md.
Muller, Hollis LeRoy, Jr. Pa.
B.S. 1944, U. S. Military Academy
A.B. 1952, Gettysburg College
Muller, Irmgard D.C.
Mulligan, William Jerome Va.
B.S. in E.E. 1949, Pennsylvania State University
Mullin, Mary Kathleen Mich.
A.B. 1956, Michigan State College
Mullinax, Roy Paul Va.
B.S. 1953, Furman University
Mullins, Charles Edward Md.
A.B. 1954, Princeton University
Mullins, George Gordon Va.
A.B. 1944, Hamline University
Mullins, Jessie Edith Va.
A.B. 1949, The George Washington University
Mulvey, Frederick D.C.
A.B. in Ed. 1933, A.M. in Ed. 1940, The George Washington University
Mulville, Daniel Russell Md.
Mulroney, William Corbett Md.
A.B. 1948, Ohio Wesleyan University
Mumford, Roger M. Va.
Mumma, Patrick Joseph Va.
Muncy, Neil Allen D.C.
Munn, Robert Hector Mass.
Munro, Sanford Sterling, Jr. Wash.
A.B. 1957, The George Washington University
Munroe, Leslie Joseph Calif.
Munson, Marlene Marie D.C.
A.B. in Ed. 1953, The George Washington University
Munson, William Bergman D.C.
Munter, Theodore Albert D.C.
A.B. 1954, Bucknell University
Murano, Bertha Vogler D.C.
Murdoch, James Roland Ga.
B.S. in I.M. 1950, Georgia Institute of Technology
Murdoch, Ruth Mae Md.
A.B. 1928, Emmanuel Missionary College
M.S. in Ed. 1957, University of Southern California
Murnan, Christine Md.
Murphy, Alan Ralph D.C.
B.S. 1951, Minnesota State College, St. Cloud

Murphy, Charles Franklin N.C.
A.B. 1956, Stanford University
Murphy, Donald Loren Md.
A.B. 1952, Central State College
Mus.M. 1955, University of Oklahoma
Murphy, James Doolan D.C.
Murphy, James Emmett Va.
Murphy, John A. D.C.
A.B. 1956, St. Francis College
Murphy, John Rhodes Va.
A.B. 1955, Harvard University
Murphy, John Robert Va.
A.B. 1949, University of Southern California
Murphy, Mary Erin D.C.
Murphy, Robert Emmett D.C.
Murphy, Robert Lawrence D.C.
Murray, Betty Lucile D.C.
A.B. 1931, Georgia State College for Women
Murray, Edward Patrick Md.
Murray, Elizabeth Ann Md.
Murray, George Cloyd Md.
Murray, Henry Franklin Texas
A.B. (C.G.S.) 1957, The George Washington University
Murray, James Glick Md.
B.S. in M.E. 1948, University of Maryland
M.S. in M.E. 1952, University of Washington
B.E.E. 1956, The George Washington University
Murray, Jeremiah Gerard N.J.
B.S. 1957, Newark College of Engineering
Murray, Kittie Anne Wis.
Murray, Mary Elizabeth Va.
B.S. 1933, M.S. 1934, University of Illinois
Murray, Robert Joseph Va.
B.S. 1951, University of Scranton
Murray, Sarah Beltz Md.
B.S. 1957, Carnegie Institute of Technology
Murray, Susan Eleanora Md.
Murray, Zama Louise Va.
B.S. 1929, University of Minnesota
Murrell, Robert Gene Va.
B.S. 1950, University of Kansas
Murry, Merritt Lee N.J.
Murto, Eleanor Anne D.C.
Muschamp, Joan Margaret Va.
Muse, Joseph Francis, Jr. N.Y.
B.S. in M.E. 1956, Brown University
Musgrode, Robert Granville D.C.
Music, Stanley Irving D.C.
Mussarro, Louise Josephine N.Y.
Musser, Carl Wilson Va.
A.B. 1952, Emory and Henry College
Mussey, Bernice Ella Va.
Mussey, Richard Andrew Va.
B.Ch.E. 1956, University of Virginia
Musumeci, Alfred Vincent N.Y.
B.M.E. 1956, Rensselaer Polytechnic Institute
Mutchler, John Powell Md.
Muth, Clifford Frederick Ohio
B.S. 1951, University of Cincinnati
M.S. 1955, Ohio State University
Muzidal, Stanley Frank Va.
Muziko, George Michael Md.
Muzio, Joseph Nicholas N.Y.
A.B. 1955, Queens College
Muzzey, Jane Warner D.C.
A.B. 1953, Wellesley College
Myers, Charles Hammet D.C.
A.B. 1953, University of North Carolina
Myers, David Michael Md.
Myers, Donald Ross Pa.
Myers, Harold D.C.
A.B. 1954, The George Washington University
Myers, Harry J., Jr. Colo.
A.B. 1957, University of Colorado
Myers, Howard Warfield D.C.
Myers, Jack A. Md.
B.S. 1953, U. S. Naval Academy
Myers, Jacob Eugene Md.
Myers, James Joseph N.Y.
Myers, John Faris Md.
A.B. 1954, University of Maryland
Myers, Nancy Davis Md.
Myers, Saul Meredith Va.
Myhre, Charles Jerome N.D.
B.S. 1957, North Dakota State College
Myklebust, Hans Norway
Myles, Vale Patrick D.C.
B.S. in E.E. 1953, University of Nevada
Myrick, Ferd Randal Va.
A.B. 1956, Sheperd State College
Myron, Mary Louise D.C.

N

Nabil, Yadollah Iran
Nachajski, Peter John Conn.
A.B. 1956, Brown University
Nachamkin, Nathan D.C.
B.M.E. 1939, New York University
Nacht, George Golden D.C.
Nadeau, Lurene Mary Maine
Nadolney, Carlton Henry N.Y.
B.S. 1956, Brooklyn College
Naessens, Marcel Aime Ill.
Nafpliotis, Panayotis Andrew D.C.
Naftalin, Micah Harry D.C.
A.B. 1955, Brandeis University
Naglak, Andrew Louis, Jr. Pa.
Nagle, Charles Leo III Ark.
B.S. 1942, Louisiana State University
Nagle, Stanley Correll, Jr. Md.
B.S. 1950, Dickinson College
M.S. 1956, The George Washington University
Nagy, Ernest Andrew Va.
Nagy, Joseph Bela Va.
Nagy, Paul N.Y.
Nagy, Tibor D.C.
Nall, John David Va.
Nall, John Williams Va.
A.B. 1942, University of Arizona
Nancarrow, John Frederick Md.
A.B. 1950, M.D. 1954, University of Pennsylvania
Nance, Jack Stanford, Jr. Va.
Napolino, Josephine Ann N.Y.
A.B. 1956, College of William and Mary
Naqiyullah, Abul B. M. Ind
B.S. 1955, Dacca Medical College, Pakistan

Naquin, Roy Joseph Va.
Narcho, Burton Austin Ariz.
B.S. in B.A. 1952, M.B.A. 1955, University of Arizona
Narr, Frank Joseph Md.
Narr, Gudrun Hedwig D.C.
Narsted, Margaret Ann D.C.
Nash, Cecile Joy Okla.
Nash, Mabel M. Va.
Nash, Patricia K. Md.
Nash, Sandra Newing D.C.
A.B. 1956, Syracuse University
Nashl, Rita Yvonne D.C.
Nason, Nina Lee D.C.
B.S. in I.E. 1955, Illinois Institute of Technology
Nason, Peter Vollmer, Jr. D.C.
B.S. in Eng. Adm. 1954, Case Institute of Technology
Nathanson, James Elzar Mass.
A.B. 1954, Harvard University
Natman, Michael Jona D.C.
Natof, Stuart Lowell Va.
Nayden, James Frank Md.
B.S. 1952, Loyola University
Naurot, Dorothy G. Md.
Naurot, James B. Md.
B.S. 1955, University of Maryland
Naylor, Stephen Paul N.Y.
A.B. 1951, St. Bernardine of Siena College
Neal, Philip Stanley Va.
A.B. 1954, University of Colorado
Neal, William Albert Md.
A.B. 1956, University of Maryland
Neal, William Alfred D.C.
B.S. in P.E. 1954, A.M. in Ed. 1955, The George Washington University
Neale, Clara Judy D.C.
Neate, John DeJarnette Va.
Needles, Lorraine W. Va.
A.B. 1947, Coe College
Neel, Edward O'Donnell D.C.
Neely, Charles Alpheus S.C.
Neely, John Crosby D.C.
A.B. 1951, Colgate University
Neff, Alice F. Va.
Neff, Margaret Wise D.C.
Neffinger, George Gail Mass.
B.S. in B.A. 1951, University of Florida
Negahbani, Mansour Iran
Negrine, Elie D.C.
Negron, Marie Chitwood Diane Md.
Neighbarger, Patricia Ann D.C.
Neil, Victor John Md.
Neilan, George Joseph N.Y.
B.E. 1957, Yale University
Neild, Alton Bayne, Jr. Md.
B.S. in M.E. 1943, Johns Hopkins University
Neill, Barbara Ledman D.C.
Neill, Charles Waggaman Md.
B.E.E. 1953, Catholic University of America
Neimark, Sheridan Lew Ohio
B.S. in Ch.E. 1957, Carnegie Institute of Technology
Neimo, Peter James Va.
B.S. 1922, U. S. Naval Academy
M.S. 1930, Harvard University
Neira, Arthur Ramond Va.

Nell, Richard Titus Md.
B.S. 1940, Pennsylvania State Teachers College, Shippensburg
Ed.M. 1951, University of Maryland
Nelson, Anne Dodenhaff Va.
B.S. 1940, Mississippi State College for Women
Nelson, Arthur Edward Md.
B.S. 1940, Upsala College
Nelson, Daniel Emmet Utah
B.S. 1953, University of Utah
Nelson, David Hardy D.C.
B.S. 1957, University of California
Nelson, Donald Charles Okla.
Nelson, Eda Christina Va.
A.B. 1933, A.M. 1934, University of Oklahoma
Nelson, Erven Jean Utah
B.S. 1954, Brigham Young University
Nelson, Gordon Thomas Idaho
Nelson, Harold Wilford Va.
Nelson, Harry King Va.
Nelson, Herbert Stoley Va.
Nelson, John Franklin Md.
B.S. 1950, East Carolina College
Nelson, John Trescott Md.
A.B. 1954, Harvard University
Nelson, Julia Ney Va.
A.B. 1944, University of California
Nelson, Mary Donna Va.
Nelson, Olivia M. Nebr.
Nelson, Phyllis Ann Va.
Nelson, Robert Edward, Jr. Ohio
A.B. 1955, Youngstown University
Nelson, Sandra N.J.
A.B. 1956, Lebanon Valley College
Nelson, Sol S. Md.
B.S. 1940, College of the City of New York
Nelson, Stewart Burton D.C.
Nelson, Thomas Freeman Pa.
B.S. in Ch.E. 1956, Lafayette College
Nelson, Waltrout Dorothea Va.
Nelson, William Lowry Va.
Nemec, James Greve Ill.
B.S. in Ag. Eng. 1953, North Carolina State College
Nemes, Angeline Knight Md.
A.B. 1941, Bowling Green University
Nemeth, Charles D.C.
Neri, Estelle Louise Md.
Nero, Geneva M. D.C.
B.S. 1956, D. C. Teachers College
Nero, James Herbert D.C.
Nero, Shirley Howard D.C.
B.S. 1955, D. C. Teachers College
Nesbit, Mark Edwin Va.
B.S. 1955, University of Wisconsin
Nesbit, Melville David, Jr. Va.
A.B. 1935, Bucknell University
Th.B. 1938, Auburn Theological Seminary
Nesheim, Stanley N.Y.
B.S. 1956, Brooklyn College
Nespoli, Edmund Anthony D.C.
A.B. 1954, A.M. 1955, La Salle College
Nesterak, Leonard William Pa.
Nestle, Roger William Mich.
B.S. 1955, University of Maryland
Nethken, Mary Helen W.Va.
A.B. 1930, A.M. 1932, West Virginia University

Netzer, Michael Austin	Va.
Netzer, Murray Earl	D.C.
Neufer, John Earl B.S. 1949, Bluffton College Ph.D. 1958, Wayne State University	D.C.
Neuhauser, Thomas Hugh	Md.
Neuhauser, Robert Phillips	D.C.
Neumann, Albrecht J. B.S. 1937, M.S. in E.E. 1938, Columbia University	D.C.
Neumann, George Wallace B.S. in E.E. 1952, University of Maryland	Md.
Neumann, Ottmar Antonius B.S. in Gph. Eng. 1953, St. Louis University	Mo.
Neuner, Tillman H. A.B. 1950, Yale University LL.B. 1953, Georgetown University	Va.
Neves, Octavio Rainhoda Silva Graduate 1954, Brazilian Institute of Foreign Service	Brazil
Neviaser, Jules Salem	D.C.
Neville, Glenn Everette B.S. 1949, M.S. 1951, University of Florida	Md.
Neville, Tove Esther	Va.
Nevins, John David	Va.
Newberry, Robert Lemuel	Va.
Newbold, John Lowe III B.S. 1957, Yale University	D.C.
Newbould, Edmond John B.S. 1940, U. S. Naval Academy	Va.
Newcomb, Anthony Mead A.B. 1958, Oberlin College	Va.
Newcome, Edgar LeRoy	D.C.
Newell, Jean Stuart	D.C.
Newell, William Dickerson	Va.
Newhard, Noel Guy A.B. 1950, La Sierra College	Calif.
Newheiser, James Roger	Va.
Newman, Alan Julian	D.C.
Newman, David Richard	Md.
Newman, Henry Carl B.S. 1949, University of Illinois	D.C.
Newman, Lona Bernstein	Va.
Newman, Margarita M. A.B. 1948, Radford College	Va.
Newman, Max A.	D.C.
Newman, Paul Edward	Md.
Newsom, Walter Jerry	Mo.
Newton, Allan Douglas A.B. 1953, Sacramento State College	Miss.
Newton, Eva Abel	Va.
Newton, James Robert	Va.
Newton, Richard Allen	D.C.
Neyland, Herbert Michael	Va.
Neyman, Elizabeth Sutherland A.B. 1957, University of California	Calif.
Nguyen, Lan Huong	Vietnam
Nguyen, Dan Xuan B.S. in F.S. 1956, Georgetown University	D.C.
Nibley, Owen Smoot B.S. 1950, U. S. Military Academy	Va.
Nice, Eunice Virtue B.S. 1949, University of Denver	Md.
Nichiporuk, Harry B.S. 1956, University of Maryland	Pa.
Nichol, L. Dow III B.S. in C.E. 1953, University of Illinois	Ill.
Nichols, Ezra Francis, Jr. B.S. 1931, University of Washington	Va.
Nichols, John Slauter B.S. 1951, College of William and Mary Ed.M. 1955, University of Virginia	Va.
Nichols, Leo	D.C.
Nichols, Leonard Irving B.S. 1955, Georgetown University	Va.
Nichols, Mary Barbara	Va.
Nicholson, Donald Robert	Conn.
Nicholson, Priscilla Anne	Va.
Nichelson, Carl Lincoln A.B. 1957, University of Pittsburgh	Pa.
Nicks, Paul Benton B.S. 1940, Texas Agricultural and Mechanical College	Texas
Nicodemus, Robert Browning A.B. 1956, The George Washington University	Md.
Nicolas, Gisele	Haiti
Nicoletopoulos, Panagiotis P. LL.B. 1955, University of Athens	Greece
Nicolette, Benjamin Peter A.B. 1948, Syracuse University	D.C.
Nicoll, John	N.Y.
Nicoll, Rosalie Ann	N.Y.
Niehl, Betsy Wharton A.B. 1957, Oberlin College	Va.
Nielsen, Arthur Thomas	Va.
Nielsen, Leo Wesley B.S. in B.A. 1950, Utah State University	Utah
Nieminen, Niilo B.S. 1956, University of Maryland	Md.
Niesen, Nancy Jo	D.C.
Nieweg, Elroy Louis A.B. 1957, Allegheny College	D.C.
Niksas, Jean Elizabeth	Iowa
Niland, Joseph Francis	Mass.
Niles, Helen Stone	D.C.
Nilles, John Joseph	Pa.
Nilsestuen, Rolf Melius B.S. 1943, Wisconsin State College A.B. 1947, St. Olaf College M.S. 1955, Pennsylvania State University	Md.
Nilson, Robert Gordon B.S. 1957, Virginia Polytechnic Institute	D.C.
Nimetz, Jack	D.C.
Nimmo, Murray Franklin A.B. 1955, University of Virginia	Va.
Niosi, Ross Christopher	D.C.
Nisenson, Jerry Herman B.S. 1953, Cornell University M.B.A. 1957, New York University	N.Y.
Nisewander, Elton Lee	Va.
Nishi, Hiroshi B.S. 1945, Colorado State College M.S. 1949, Oregon State College	Md.
Niss, Norton Alvin	D.C.
Nissly, Charles Martin A.B. 1956, Pennsylvania State University	Pa.
Nitsios, Argirios Charles	D.C.
Nitta, Henry Masao A.B. 1953, University of Hawaii	Hawaii
Noble, Jo Ann Louise	D.C.
Noble, Patricia	Ind.
Nobos, Carlos E.	Md.
Noe, Blythe Hilton	N.C.
Noe, Marjorie Jean	Colo.
Noel, Paul A. B.S. 1953, University of Maryland A.M. 1956, Stanford University	Mo.

Noell, Rebecca Young	N.C.
Nokes, George William	D.C.
Nolan, Ellen Peelle	Md.
Nolan, Frank J. Patrick	Md.
Nolan, John Joseph	Pa.
A.B. 1953, King's College, Pa.	
Nolde, Robert Harry	Md.
Nolin, John Andrew	Va.
A.B. 1954, Grinnell College	
Noone, James Henry	Md.
Noone, Joseph Charles	Md.
Norbeck, Edith Marie	Va.
Nordahl, June Anne	D.C.
Nordberg, Carl Alferd	Mich.
A.B. 1953, University of Michigan	
Nordquist, Paul E. R., Jr.	Va.
Nordstrom, John Ranco	N.D.
A.B. 1949, Moorhead State College	
Nordstrom, Robert Earl	D.C.
Norfolk, Paul Andrew	Md.
A.B. 1950, University of Maryland	
Norman, Nancy Ann	D.C.
Normandy, Mary H.	Va.
Norris, Carolyn Gallagher	Va.
Norris, Chalmers Gail, Jr.	Md.
B.S. in Ed. 1956, Pennsylvania State Teachers College, Shippensburg	
Norris, Robert Brewer	D.C.
A.B. 1955, University of Virginia	
Norris, Thomas Lee	Md.
Norris, William Arthur, Jr.	Fla.
North, Barbara Dare	Iowa
Northcutt, Ewing	Ark.
Northrup, James Richard	Nebr.
Norton, Donald Francis	Va.
B. Mgmt. Eng. 1957, Rensselaer Polytechnic Institute	
Norton, Elizabeth Thurston	D.C.
Norton, John, Jr.	D.C.
Norton, Virginia Symns	D.C.
A.B. 1927, University of Missouri	
A.M. 1957, The George Washington University	
Norwood, Andean Carter	Va.
B.S. 1952, Oklahoma College for Women	
Notary, Albert Colombo	Md.
B.M.E. 1952, Oklahoma Agricultural and Mechanical College	
Notes, Rachael	D.C.
Notowidigdo, Musinggih Hartoko	D.C.
Nott, James Allen	D.C.
B.S. 1958, University of Maryland	
Nottingham, Thomas Jacob III	Va.
Novak, Dan	Md.
A.B. in Govt. 1957, The George Washington University	
Novak, Joel Warren	Va.
Novak, Julie Ann	Va.
Novak, Steve	Md.
Novinger, Faith Fairchild	D.C.
A.B. in Ed. 1932, A.M. in Ed. 1940, The George Washington University	
Novos, Marilyn Jay	D.C.
Noyes, Henry Joseph	Md.
B.S. 1951, University of Maryland	
Noyes, John Zabriskie	N.Y.
A.B. 1952, University of Washington	
Nunnelly, Charles Allen, Jr.	Ala.
Nunzio, Nicholas Stephen	D.C.
A.B. in Govt. 1957, The George Washington University	
Nutt, Don S.	Va.
Nuttell, Mary Gertrude	Md.
Nutter, Donald Owen	D.C.
A.B. 1957, Johns Hopkins University	
Nye, Barbara Jane	Calif.
Nye,Carol Elizabeth	D.C.
Nye, Luther Bertram, Jr.	Va.
B.E. 1934, Johns Hopkins University	
Nypaver, Edward William	Pa.
B.S. in C.E. 1957, University of Pittsburgh	

O

Oakes, Thomas Burrett	Va.
A.B. 1956, Yale University	
Oaks, Maurice David	D.C.
B.S. 1956, Franklin and Marshall College	
Obear, Margaret Fealy	Va.
A.B. 1955, The George Washington University	
Obeid, James Albert	Pa.
Oberg, Donald Eugene	Md.
Oberg, Eugene William	D.C.
Oberhauser, Louis B. II	Iowa
B.S. in C.E. 1956, Iowa State College	
Oberle, Elsa Marilyn	Mass.
B.S. 1949, Simmons College	
M.S. 1952, University of Connecticut	
Oberlin, Phillip Spayde	Ohio
B.S. in Met. E. 1955, Purdue University	
Obermeier, Angela	Va.
O'Briant, Robert Earl	N.C.
B.S. 1955, University of Maryland	
O'Brien, Diane Elizabeth	D.C.
O'Brien, James David	Mass.
B.S. in F.S. 1953, Georgetown University	
O'Brien, John Cornelius	D.C.
O'Brien, Maida Marie	D.C.
O'Brien, Margaret Alicia	Md.
A.B. 1955, Trinity College	
O'Brien, Thomas Michael	D.C.
Ocker, Erwin Marshall	Mo.
A.B. 1954, Washington University	
Ockerman, Lynn	Va.
Ockershausen, Carla Henrietta	D.C.
A.B. in Ed. 1932, The George Washington University	
A.M. 1938, Columbia University	
Ockershausen, Charles James	Va.
O'Connell, Edward Joseph	Va.
A.B. 1952, Northeastern University	
O'Connell, James Patrick	D.C.
A.B. 1947, Yale University	
O'Connor, Donald Edward	Va.
O'Connor, Donald Martin	D.C.
O'Connor, Egan	D.C.
O'Connor, John Thomas	Va.
A.B. 1957, University of Maryland	
O'Connor, Lois Clara	Va.
O'Connor, Patricia Theiss	D.C.
O'Connor, Richard Leo	Calif.
A.B. in Govt. 1951, The George Washington University	
O'Connor, Robert Francis	Md.
Odarchenko, Alexander	D.C.
O'Dell, William Rice	Ill.
A.B. 1950, Stanford University	
Oder, Lyle Deane	Conn.
B.S. 1944, U. S. Naval Academy	
M.S. 1953, University of California at Los Angeles	

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Odin, Dexter Stetson
B.S. 1956, University of Florida Md.
O'Donnell, Garland Wooding Mass.
O'Donnell, George William D.C.
O'Donnell, Harold Va.
O'Donnell, Linda Kay Va.
O'Donnell, Michael Charles Va.
O'Donnell, William Joseph, Jr. D.C.
Oehl, Richard Guilday
B.Ch.E. 1952, M.Ch.E. 1953,
Rensselaer Polytechnic Institute Md.
Oeltjen, Walter O.
B.S. 1937, University of Nebraska Va.
Oertel, Nelson
A.B. 1953, The George Washington
University Md.
Oestreicher, Carl Md.
Officer, Julius Earle
B.S. 1950, University of Idaho D.C.
Offord, Lillian Beatrice
B.S. 1951, Morgan State College
A.M. 1953, New York University D.C.
Offutt, Charles Edward, Jr. Va.
Ogas, Mary P.
B.S. 1940, Pennsylvania State Teachers
College, Mansfield Va.
Ogg, George Wesley
A.B. 1954, Colgate University N.C.
Oglesby, Spurgeon Ithema, Jr.
B.S. 1952, Livingstone College Ga.
Ogletree, James M.
A.B. 1947, Georgia Southwestern
College Va.
O'Grady, John Michael
A.B. 1945, Sacred Heart Seminary,
Detroit
A.M. 1949, Mexico City College Korea
Oh, Heoung Lock N.Y.
Ohanesian, Victor
B.S. 1949, Springfield College N.J.
O'Hanlon, Patricia Therese
B.S. 1955, Marquette University
A.M. 1958, Catholic University of
America Va.
O'Hava, Audrey Teresa Va.
Oberg, Olof Ernst Ohio
O'Horo, Irene Elizabeth Md.
Oittinen, Kaleri Esa N.J.
Okamoto, Kaname Wash.
Okano, K. Frederick
B.Ae.E. 1949, A.M. 1951, University
of Minnesota Md.
Olafson, Patricia Louise D.C.
Olans, Jerome Leon
A.B. 1949, Brooklyn College
A.M. 1950, Columbia University Va.
Olbrich, Marianne Christa Va.
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B.S. in E.E. 1944, Montana State
College, Bozeman Md.
Oler, Douglas Nelson
B.S. in C.E. 1952, University of
Maryland Md.
Olesker, Charlotte Z.
B.S. 1943, Drexel Institute of
Technology D.C.
Olewin, Dolores Georgia
B.S. 1954, Boston University Va.
Olexa, Donald Steen
B.S. 1956, Pennsylvania State
University

Conn.
Olexo, George Robert
A.B. 1950, University of Bridgeport
A.M. 1955, New York University Va.
Oleyar, George Louis
B.S. 1951, Georgetown University Ohio
Oliphant, Carol Jean Okla.
Oliphant, Christine Gertrude Va.
Olive, Carlyne Mae D.C.
Oliver, Delaney
A.B. 1950, Howard University D.C.
Oliver, Elizabeth Hanahan Ill.
Oliver, Garvin Lee Va.
Oliver, James William D.C.
Oliver, Nancy Elizabeth D.C.
Oliver, Richard Maxey
B.S. 1923, U.S. Naval Academy D.C.
Olmert, Donald Lee Va.
Olmstead, Sarah Jenkins
B.S. 1926, Waynesburg College
M.S. in Ed. 1940, University of
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Olsen, Dennis M.
B.S. 1951, Brigham Young University Va.
Olsen, Earl Richard
B.S. 1956, University of Wisconsin N.Y.
Olshin, Nathan Abraham
A.B. 1955, Columbia University Va.
Olson, Hardin Elling
A.B. 1955, The George Washinbton
University N.Y.
Olson, Harding William
B.S. 1951, Kent State University D.C.
Olson, Robert Fisher Va.
Olson, Robert Leo
B.S. in Eng. 1956, South Dakota School
of Mines and Technology Va.
Olson, Ruth Louise Md.
Olsson, Charlene Elizabeth Pa.
O'Malley, Anne Marie
A.B. 1954, Marywood Colleye N.Y.
O'Malley, Jane Carroll Va.
O'Mara, James Herbert
B.S. 1957, The George Washington
University D.C.
On, Frank Joe
B.M.E. 1956, The George Washington
University
M.S. in M.E. 1957, University of
Maryland Md.
O'Neal, James David
A.B. 1953, The George Washington
University Ohio
O'Neal, Louise
A.B. 1940, Ohio Wesleyan University
M.N. 1943, Western Reserve University D.C.
O'Neale, John Daniel Mass.
O'Neill, Barbara Mary Md.
Ong, Beale Hibbs
A.B. 1955, The George Washington
University Md.
Onslow, Vincent LeRoy Md.
Ontko, Jaroslav George
A.B. 1949, Columbia University Md.
Ontko, Ronald Steve Md.
Onufrak, Andrew D.C.
Opack, Edward Herbert D.C.
Opasnov, Maria
A.B. 1952, Wellesley College Md.
Opdyke, Robert Dale
A.B. 1957, Western Michigan College Mass.
Oppenheimer, Richard James, Jr. Ohio
Opsal, Lewis William Okla.

Orcutt, Jeanne Marie Mich.
Ordowski, Ronald Bernard D.C.
Ormerod, Charles Warren N.J.
O'Regan, William Vincent, Jr. Md.
O'Rear, Charles Edward Va.
O'Reilly, Cornelia Audrey D.C.
O'Reilly, Hugh Thomas D.C.
B.S. 1954, Georgetown University
O'Reilly, Richard Rolin Pa.
B.S. 1957, University of Pittsburgh
Orgel, Irene England
A.B. 1942, University of California at Los Angeles
A.M. 1947, Columbia University
Oriel, Phyllis Marie Va.
Orlando, Enrico Deigo N.J.
Orlinsky, Stanley William N.J.
Orlove, George D.C.
Orman, Milton D.C.
LL.B. 1952, University of Wisconsin
A.B. 1955, The George Washington University
Orme, Theodore Scholle Md.
Ormsby, Floyd Lansing N.Y.
Ornadzian, Vahan Md.
Orner, Robert Thomas Pa.
B.S. in E.E. 1957, University of Notre Dame
Orr, Henry Clayton Pa.
B.S. 1949, Howard University
Orr, Robert Hutchinson Pa.
B.S. in Aero. Eng. 1948, University of Michigan
Orr, Rosina D.C.
Orringer, Benjamin Alan N.C.
A.B. 1956, University of North Carolina
Ortega, Alicia Venezuela
Ortiz, Alfred D.C.
A.B. 1956, Texas Western College
Ortiz-Irizarry, Francisco G. D.C.
Ortiz, Nestor C. Va.
A.B. 1934, University of California at Los Angeles
A.M. 1939, University of California
Osato, Satoshi Hawaii
Osawa, Etsuko Md.
A.B. 1952, University of California
Osborn, James McClain Va.
B.S. 1937, M.S. 1939, University of Maryland
Osborn, Merle Edwin D.C.
Osborn, Ruth Helm Va.
B.S. in Ed. 1940, University of Minnesota
A.M. in Ed. 1946, The George Washington University
Osborne, Charles M. D.C.
Osborne, Charles Sterling Md.
Osborne, Gerald Lynn Va.
Oscar, Paul Albert D.C.
Osheroff, Deena Shirley D.C.
Osheroff, Seymour David D.C.
Oslund, Roald Robert D.C.
Ospina, Edilberto D.C.
Osso, Anna Dolores Pa.
Osten, Edward James Va.
Ostenberg, Jane Frances Va.
Ostermayer, Eugenia Williams Va.
A.B. 1940, The George Washington University
Osti, Lester Charles D.C.
Ostrow, Morton Charles D.C.
O'Sullivan, John Maurice Mass.
O'Toole, Mary Mass.
A.B. 1956, Smith College
O'Toole, Ursula Elizabeth Mich.
B.S. 1954, Loyola University
Ott, Katherine Anna Va.
B.S. 1934, Western Reserve University
A.M. in Ed. 1950, The George Washington University
Ottenberg, Ronald I. D.C.
A.B. 1956, The George Washington University
Ottman, Millard Frederick, Jr. Va.
A.B. 1956, Johns Hopkins University
Otto, Ingolf Helgi Elfried Mo.
A.B. 1941, University of Cincinnati
A.M. 1950, The George Washington University
Outerbridge, Robert Dearing Va.
Overdorff, Genie Lee Va.
Overton, Jesse Herbert, Jr. Va.
A.B. 1947, Randolph-Macon College
Overton, John Anthony Md.
Ovrevik, Russell Lloyd Va.
Owen, Archibald Alexander III Pa.
B.S. in Ch.E. 1954, Bucknell University
Owen, Barbara Jessie D.C.
Owen, Deborah Dudley D.C.
Owen, Leslie Eugene Iowa
Owen, Mary Alice N.Y.
Owen, William Edward Va.
B.M.E. 1955, Alabama Polytechnic Institute
Owen, William Evan D.C.
Owens, Charles Douglas N.M.
A.B. 1956, Baylor University
Owens, Lee Taylor N.M.
Oxaal, Barbara Scott D.C.
A.B. 1957, Ohio State University
Oxaal, Ivar D.C.
A.B. 1954, Ohio State University
Oyama, Jiro Md.
B.S. 1949, Northwestern University
M.S. 1956, The George Washington University
Ozefovich, Joseph Edward Pa.
Ozur, Herbert Md.
A.B. 1949, New York University
A.M. 1951, Temple University

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Paabo, Gunnar D.C.
Paabo, Maya D.C.
B.S. 1956, The George Washington University
Pabon-Gomez, Pedro Mario Puerto Rico
A.B. 1955, Polytechnic Institute of Puerto Rico
Pace, John S., Jr. Va.
B.S. in C.E. 1939, Georgia Institute of Technology
Pace, Lawrence Justus, Jr. Va.
Pachute, Michael A. Va.
B.M.E. 1946, University of Louisville
LL.B. 1949, University of Virginia
Pack, Patricia Ann Md.
B.S. in Ed. 1951, Maryland State Teachers College, Towson
Packan, Charles Domenick Pa.
Packard, Charles Earl II Va.
A.B. 1953, Randolph-Macon College

Packard, Duane Leslie Md.
A.B. 1950, Minnesota State Teachers College, Mankato
Packard, Leo Bryce Md.
Packard, Richard Bryan Pa.
Packett, Jessie May Md.
Packett, Ryland Delano Md.
Pacl, Marguerite Fay Va.
Padgett, Charles Leonard, Jr. Va.
Padgug, Leon Jerome Md.
Padlar, Gloria Ann D.C.
Pagano, Joseph Ferdinand N.J.
A.B. 1952, Niagara University
Page, Eloise Randolph D.C.
A.B. 1957, The George Washington University
Page, P. Gladys Md.
Page, Theodore Frank D.C.
Page, William Lee Va.
A.B. in Govt. 1942, The George Washington University
Paige, Carl Addison N.C.
B.S. 1957, University of Maryland
Paige, Ronald Albert Mass.
B.S. in B.A. 1942, Boston University
Paine, Thomas Eugene Va.
Painter, Ethan Allen Va.
Painter, Robert Kessler Va.
B.S. 1953, University of Illinois
Painter, Rolen Hupp D.C.
Paintin, Francis Arthur Va.
B.S. in Ch.E. 1951, Case Institute of Technology
Pak, Sung Wan Korea
Palamara, Edward Anthony Md.
A.B. 1951, University of Maryland
Palau, Alejandro Md.
B.S. 1955, University of Maryland
Paleologos, Peter Harry Md.
Palic, Georgette Katherine D.C.
Palladino, Mary Ax D.C.
A.B. 1930, Lebanon Valley College
A.M. 1933, Pennsylvania State University
Pallansch, Margaret Mary D.C.
A.B. 1940, Trinity College
LL.B. 1953, The George Washington University
Pallone, Nicolina Ann D.C.
A.B. 1955, Catholic University of America
Palmasani, Daniel Robert Md.
Palmer, Alfred Monroe, Jr. Va.
Palmer, Arthur Irving, Jr. Va.
B.E. 1949, Yale University
M.S. 1956, University of Virginia
Palmer, Donald Ray W.Va.
Palmer, Donald Sharp D.C.
Palmer, Frances Kirk Va.
Palmer, James Albert Va.
Palmer, James Kenneth D.C.
Palmer, John Leachman Va.
B.S. 1949, A.M. 1952, University of Virginia
Palmer, Karl Gilbert Oreg.
B.S. 1941, Oregon State College
Palmer, Louise Landman Va.
A.B. 1941, University of Chicago
Palmer, Robert Buel D.C.
Palmer, Robin Helen Fla.
Palmisano, Rocco Richard Md.
Paluck, Joseph John D.C.

Panek, Louis Anthony Md.
B.S. 1941, Michigan College of Mining and Technology
M.S. 1946, Ph.D. 1949, Columbia University
Panella, Bernard Joseph Va.
Pang, Jen-Ming Formosa
Pantos, George John Mass.
A.B. 1952, Syracuse University
Panzitta, Frank Ralph N.J.
A.B. 1957, The George Washington University
Panzitta, Joseph N.J.
A.B. 1955, The George Washington University
Papa, Marco James Del.
B.S. 1953, University of Maryland
M.S. 1956, University of Delaware
Papadopoulos, George Panagiotis D.C.
Papaioanu, John Nicholas Va.
A.B. 1955, University of Delaware
Papp, Frank, Jr. N.Y.
A.B. in Govt. 1957, The George Washington University
Pappa, Henry Aramburu D.C.
A.B. in B.A. 1955, San Jose State College
Pappas, Gus John S.C.
B.S. 1956, University of Illinois
Paramskas, Nathalie D.C.
A.M. 1941, University of Vilnius
Parcell, Shirley Dolores Fla.
Pardee, Betty Jewel Md.
Parfrey, Marilee Joan Va.
Pargas, Loretta Ann D.C.
Pargas, Rafael Peredo Philippines
Parham, Sumner Fuller N.C.
Park, Charles Gary D.C.
A.B. 1955, University of Colorado
Park, Chyun Shik Korea
LL.B. 1955, Seoul National University
Parker, Betty Augur Va.
A.B. 1941, Stanford University
Parker, Blanche Mae Md.
A.B. 1935, A.M. 1941, Howard University
Parker, Caddie Lewis D.C.
B.S. 1954, University of Utah
Parker, Charles Brand, Jr. D.C.
Parker, Charles Robin Va.
B.S. 1941, Duke University
Parker, Deane Emerson Va.
Parker, Gayle Va.
B.S. in Ind. Eng. 1956, Lafayette College
Parker, Harold Curtis Va.
Parker, Harrison James D.C.
A.B. 1946, Morgan State College
Parker, Jerry Michael Pa.
B.S. 1957, University of Pittsburgh
Parker, John Elliott D.C.
B.S. 1950, The George Washington University
Parker, Joseph Elbert Va.
Parker, Kathleen Priscilla Va.
Parker, Linneaus Mortimer Md.
Parker, Mary Christine N.Y.
A.B. 1954, Smith College
Parker, Rachel Tims Ark.
A.B. 1950, The George Washington University
Parker, Ralph William Va.
Parker, Richard Gerald Md.

Parker, Ruth Taylor	Va.
Parker, Stephen Dennis	D.C.
Parker, William T. B.C.S. 1947, Golden Gate College	Va.
Parkin, Mary Clare	Md.
Parkinson, Daniel Milton	Va.
Parkison, Edgar Raymond	Md.
Parks, Finley James, Jr.	Va.
Parks, Kendrick Wellman	Va.
Parks, Lois Ferry A.B. 1929, University of California at Los Angeles	Va.
Parks, Mary Ellen B.S. 1950, Florida State University	Va.
Parks, Paul Campbell	Mo.
Parlante, Joseph Lucius B.S. 1957, Georgetown University	D.C.
Parlin, Jerianne Byrd	Va.
Parmelee, Richard Paine	Ill.
Parmenter, Patricia Eloise B.S. 1952, Kansas State Teachers College	D.C.
Parnaby, Jennifer Ann	D.C.
Parnas, Stanley Joseph B.M.E. 1952, College of the City of New York	D.C.
Parnass, Nettie Shirley	D.C.
Parnell, Robert Lee, Jr. B.S. 1955, U. S. Naval Academy M.S. 1956, Princeton University	Fla.
Parnell, William Patrick A.B. 1943, St. Anselm's College A.M. 1948, Boston University	Va.
Parr, Wilma Faith	Va.
Parra, Phyllis Heidorf	Va.
Parrill, Shirley Katherine A.B. 1953, College of New Rochelle	D.C.
Parris, Stanford Elmer B.S. 1950, University of Illinois	Va.
Parrish, Elijah	Va.
Parry, Barbara Oneida	D.C.
Parry, James Davidson A.B. 1950, The George Washington University	D.C.
Parry-Hill, Jessie	D.C.
Parsi, Mansoor Kamkar Diploma 1948, National School for Bridges and Roads, France	Iran
Parsons, Decoe Charles A.B. 1937, Glenville State College A.M. 1942, West Virginia University	Va.
Parsons, Francis Alan	D.C.
Parsons, John Allen, Jr.	Va.
Parsons, Tahmineh Irani B.S. in H.E. 1955, The George Washington University	D.C.
Parsons, Wyly A.B. 1940, Knox College	Ariz.
Partee, Woodie Augustus, Jr. A.B. 1943, University of Georgia	D.C.
Parter, Donald Simms, Jr.	Md.
Partridge, Frances Jane A.B. 1931, B.S. in L.S. 1941, University of Illinois A.M. 1939, University of Chicago	D.C.
arzow, Sandra Heather	D.C.
ascal, Paula Frances	D.C.
asquale, Matthew Richard A.B. in Govt. 1953, The George Washington University	Md.
asquin, Vincent Anthony	Mass.
Passeltiner, Bernard Ivan A.B. 1957, The George Washington University	D.C.
Pasternak, Noel Alfred	D.C.
Pastis, William Konstantinos	D.C.
Pastore, Joseph James, Jr. B.S. 1952, New York State Maritime College	Md.
Pasztor, James Joseph	Va.
Patch, Cophas Taylor B.S. 1952, Washington and Lee University	Md.
Patchan, John	Va.
Patchan, Michael	Pa.
Patermaster, Jan Alfred	Va.
Patt, Andrew Jeremiah	Md.
Patterson, Allan Gregg B.S. 1953, Boston University	Mass.
Patterson, David Hunter A.B. 1956, Bowdoin College	Pa.
Patterson, Louise Schuessler A.B. 1934, Agnes Scott College	Ga.
Patterson, Mary Kay	Va.
Patterson, Mary Rose	Miss.
Patterson, Mary Smith	Fla.
Patterson, Richard Mortland	Va.
Patterson, Virginia Anita	D.C.
Patterson, William Henry	Va.
Patteson, Nancy Rideout A.B. 1955, Maryville College	D.C.
Paugh, Roy Leon	D.C.
Paukkunen, Airi Mirja A.B. 1957, Boston University	Finland
Paul, Alan Gilbert B.M.E. 1956, Rensselaer Polytechnic Institute	Va.
Paulson, Norman Clarence LL.B. 1950, The George Washington University	D.C.
Pavis, Adele	Va.
Pavlat, Frank Jay	Md.
Pavlick, Walter Eugene B.S. 1956, Case Institute of Technology	Va.
Pavlovski, Chester John A.B. 1949, A.M. 1955, University of Washington	Va.
Pawlick, John Edward B.S. 1952, University of New Hampshire	D.C.
Paxson, Sarah Radford	Va.
Paxton, Robert Owen A.B. 1954, Washington and Lee University A.B. 1956, Oxford University, England	Va.
Payne, Albert Alford A.B. 1942, The George Washington University	Texas
Payne, Antoinette Mae A.B. 1951, West Virginia State College	W.Va.
Payne, Emily Jeanine B.S. in Ed. 1953, D.C. Teachers College M.S. 1955, The George Washington University	D.C.
Payne, Harold Claude	D.C.
Payne, Lawrence Dewitt	Va.
Payne, Lorene Silman A.B. 1944, Texas Technological College	D.C.
Payne, Philip Leslie	Va.
Payne, Richard Ernest A.B. 1957, Lynchburg College	Va.
Payne, Robert Marr B.S. 1955, Brigham Young University	Va

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Payson, William Francis Md.
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Peachey, Laban Va.
A.B. 1952, Eastern Menonite College
Peacock, Harold Md.
A.B. 1941, Columbia University
A.M. 1954, The George Washington University
Peake, Frederick Lee D.C.
Peake, Gerald Manning D.C.
Peake, William Va.
A.B. 1956, Muhlenberg College
Pear, Rosanne Md.
Pearce, James Harry Md.
A.B. 1956, Western Maryland College
Pearce, James Tucker D.C.
A.B. 1949, The George Washington University
Pearce, Ralph John N.Y.
Pearlman, George Bernard D.C.
Pearson, Theodore Bachly Ky.
Pearson, Vernon Doreen N.C.
Peart, Lowell David D.C.
Pechenik, Marjorie Bellows Pa.
Pecher, Howard Richard Conn.
Peck, James Leo D.C.
Peck, Millard, Jr. Md.
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Peck, Ronald M. Va.
Peck, Sarah Neilson D.C.
Peckham, Charles Selden D.C.
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Peebles, David Meade, Jr. D.C.
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Peeples, William Herman, Jr. Va.
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A.B. 1947, Kansas State Teachers College, Emporia
LL.B. 1950, Kansas University
Peimann, Esther Elizabeth S.D.
Peiperl, Adam D.C.
B.S. 1957, The George Washington University
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B.S. in M.E. 1949, University of Nebraska
Pelcovite, Jeanette D.C.
B.S. 1934, University of Toronto, Canada
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Pelesky, Verdine J. Pa.
Pelham, Judy Ann D.C.
Pelletier, Elaine Mary D.C.
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B.S. 1951, University of Maryland
M.S. 1957, The George Washington University
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B.S. 1948, Rhode Island School of Design
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B.B.A. 1950, LL.B. 1952, University of Wisconsin
LL.M. 1955, New York University

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A.B. 1956, Dartmouth University
Pendleton, Catherine Ann D.C.
A.B. 1957, The George Washington University
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A.B. 1942, University of Santo Thomas, Philippines
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Penland, John Thomas S.C.
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B.S. 1948, D.C. Teachers College
Penn, Tommy Alan Md.
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Penner, Karl E. Va.
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Pennyan, Lola Miss.
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Penrod, Clair Edwin Va.
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Perez, Cesar D.C.
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A.B. 1956, The George Washington University
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A.B. 1957, Cornell University
Perkins, Vera Eggleston D.C.
B.S., A.M. 1939, Columbia University
Perko, Robert R. Va.
B.S. 1950, Georgetown University
Perlin, Elliott D.C.
B.S. 1957, The George Washington University
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Perry, Frank Brummitte Va.
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Perry, Joyce Marie Va.
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A.B. 1956, Princeton University
Perry, Owen Errett Va.
B.C.E. 1953, Georgia Institute of Technology
Perry, Ralph Foster, Jr. Va.
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Perry, Ralph Graves, Jr. Md.
Perry, Robert Sawyer D.C.
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Perry, Stanley Durward Okla.
A.B. 1955, The George Washington University
Perry, William Dial D.C.
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Perschy, James Alfred D.C.
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Person, Dorothy Tenn.
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Petersen, Janet Ann Va.
Petersilia, Edith Caylor Va.
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B.S. 1949, University of Chicago
Peterson, Donald Marvin D.C.
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B.S. 1951, Massachusetts Institute of Technology
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Peterson, Kent Albrecht Md.
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Peterson, La Nelle Hampton Va.
Peterson, Robert Frederick Idaho
A.B. 1954, University of Idaho
Peterson, Roy Herbert Va.
Peterson, Ruth Md.
Peterson, Thomas Lee Va.
B.S. 1956, Stanford University
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Petrillo, Beatriz Felpeto Cuba
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M.S. 1950, Columbia University
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Pettit, David Page Va.
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M.S. 1956, California Institute of Technology
Pettus, Charles Vance Ark.
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B.S. 1950, Arizona State College
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Ed.M. 1951, University of Maryland
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Pillot, Jose Celestino D.C.
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Pinkney, James Faulkner, Jr. Va.
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Pinson, Dottie Lee Ga.
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Piper, Randal Martin D.C.
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Pitts, Jack Williamson N.C.
B.B.A. 1956, Wake Forest College
Pitts, Virginia Annette Maine
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Platt, Robert Md.
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Plavnieks, Edvins D.C.
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Pledger, Reginald Harrison, Jr. Va.
A.B. 1955, Duke University
Plenderleith, Ian Mich.
B.S. 1951, Michigan State University
Pletsch, Dee Anne Florence Va.
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Plumb, Rosemary Dengler Md.
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A.B. 1955, Westmont College
Plymale, John Richard W.Va.
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Podoll, William Gene Neb.
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Poe, John, III Va.
Poe, Warren Clayton Md.
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Poggemeyer, Herman, Jr. Kans.
B.S. 1952, U. S. Naval Academy
Pogue, William Lloyd Md.
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Pohl, Walter George D.C.

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B.S. 1952, University of Oregon	
M.S. 1954, University of Wisconsin	
Polk, Stanley Anthony	Pa.
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B.S. in A.E. 1956, University of Miami	
Pollack, Jerrold Jerome	D.C.
Pollack, Leona Pearlstien	Md.
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Pollack, Morris Irwin	Va.
B.S. in M.E. 1954, Newark College of Engineering	
Pollack, Samuel	N.Y.
Pollard, Annie Nelms	Va.
Pollard, Lavinia Martha	Va.
A.B. 1953, Storer College	
Pollard, William George	D.C.
Pollin, Anne	D.C.
Pollock, Joseph Jordan	D.C.
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Poloway, Morton	Md.
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Pomerantz, Arthur Schnoll	D.C.
Pompilio, Roberta Mary	Va.
Ponack, Bette	D.C.
B.S. 1956, Tufts University	
Ponce, Rodger Gary	D.C.
Poole, LeRoy Algernon	Md.
Poole, Richard William	Okla.
B.S. 1951, M.B.A. 1952, University of Oklahoma	
Pope, Alfred Darwin	N.Y.
Pope, Burnam Thomas	Va.
A.B. 1950, A.M. 1951, Emory University	
Pope, Shirley Ann	N.C.
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Porter, Edwin Henry	D.C.
Porter, John Musante	Va.
Porter, Marie W.	Va.
Porter, Mary Jacqueline	Va.
A.B. 1949, Mary Washington College	
Porter, Susan	D.C.
Porter, Thomas Craig	Md.
Porter, Walter Wesley	Va.
Porterfield, Marcia Diana	Va.
Porterfield, Marguerite Krebs	Va.
Porterfield, Robert James	Va.
Porterfield, Virginia Peyton	Germany
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A.B. 1956, The George Washington University	
Posati, Eugene	Md.
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B. Marine Eng. 1951, New York State Maritime College	
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B.S. 1953, College of the City of New York	
M.S. 1955, Purdue University	
Posner, Jack	Md.
B.S. 1941, Queens College	
Possehl, Carroll Diane	Md.
B.S. 1955, Texas State College for Women	
Possessky, Edward Franklin	Va.
B.S. in E.E. 1954, M.S. in E.E. 1955, Carnegie Institute of Technology	
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B.S. 1955, University of Pittsburgh	
B.S. 1957, Pennsylvania State University	
Potter, Margaret Jane	Md.
Potter, Marvin John	Calif.
A.B. 1954, Stanford University	
Potter, Ralph E.	D.C.
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LL.B. 1956, Catholic University of America	
Potterton, Richard Lee	Va.
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A.B. 1931, University of Mississippi	
A.M. 1939, Colorado State College of Education	
Potts, Georgena Ruth	Va.
A.B. 1938, Pacific University	
Poudre, Mary Ferdon	D.C.
A.B. 1932, Pembroke State College	
Poulos, Sandra Helen	D.C.
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Powell, Bobby Keith	S.C.
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Powell, Calvin James, Jr.	D.C.
B.S. 1954, Virginia State College	
Powell, John Theodore	Va.
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Powell, Martha Gallion	Va.
B.S. 1944, University of Minnesota	
Powell, Patricia Black	Md.
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Powell, William Alfred	D.C.
A.B. 1953, Ohio Wesleyan University	
A.M. 1955, Williams College	
Powell, William Talmadge, Jr.	Va.
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Power, Roy Jerome	Md.
Powers, Alan Dale	Calif.
B.S. 1951, University of Oregon	

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Powers, Myrtle Black Md.
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Med. B., B.S. 1945, Calcutta University
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A.B. 1956, Vanderbilt University
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A.B. 1957, Harvard University
Pressman, Maurice Va.
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B.I.E. 1952, New York University
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B.S. 1950, Northwestern University
Priestly, James H. Md.
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B.S. 1943, U.S. Naval Academy
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B.S. 1949, Morgan State College
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B.Arch. 1956, University of Notre Dame
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Pugh, Charlie Lee D.C.
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A.B. 1954, Bucknell University
Puglisi, Vincent Va.
A.B. 1938, Brooklyn College
Puhek, Mary Ann Md.
B.S. 1955, Marquette University
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B.S. 1950, St. Mary's College, Kansas
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Pyles, Charles Boykin Ark.
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A.B. 1957, The George Washington University
Querze, Raoul Peter D.C.
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A.B. 1951, Ohio University
Raines, Caryl Ann D.C.
Raines, Paul Ira D.C.
Rainey, Agnes F. D.C.
Rainey, Gene Edward Texas
Rainey, Virginia Margaret Va.
Raizes, Sheldon Foster N.M.
B.S. in C.E. 1957, University of New Mexico
Rakha, Adel Said D.C.
Rakha, Youssef Bahgat D.C.
A.B. 1951, The George Washington University
Ralston, John Joseph Va.
B.C.E. 1952, Villanova University
Ramage, Barbara Joan D.C.
Raman, Parameswaraier D.C.
Ramay, Wayne Pickering Ark.
B.S. 1943, U.S. Naval Academy
Ramik, Vincent Lawrence Pa.
B.S. 1957, Pennsylvania State University
Ramirez, Fernando Enrique Puerto Rico
Ramirez, Jorge Mitchell D.C.
Ramos, Gerald Joseph Va.
Ramos, Victor E. N.J.
Ramsay, Walter Gaines Va.
A.B. 1952, Princeton University
Ranck, Althea Mae D.C.
Rand, Vernon Elmer D.C.
Rand, Victor Chris D.C.
Randa, John Charles Wis.
B.S. in E.E. 1957, Marquette University
Randall, Donald Raymond Va.
Randall, John Deshon D.C.
Randazzo, Agnes Christina Va.
Randerson, Joan Tremper N.Y.
B.S. 1949, Union College
Randle, Margaret Keeling D.C.
Randlett, Warren Baltz Md.
A.B. 1949, West Virginia University
Randolph, Jennings, Jr. D.C.
Randolph, Margaret Louise Md.
Rankin, George Morgan, Jr. Md.
Rankin, Henry Herman Va.
Rankin, John MacGregor, Jr. Va.
Rankin, Marilyn Eloise Va.
Rankin, Patricia Helen Calif.
Ransiyason, Yunyong Thailand
Rapa, Rea D.C.
Raper, Marilyn Keyes D.C.

Raphling, David Leon	Va.
Rapoport, Albert A.	Md.
Rapoport, David Leonard	Va.
Rapp, Charles Henry	N.J.
A.B. 1948, A.M. 1952, The George Washington University	
Rappaport, Regina	N.J.
Rapson, Ellen Lautman	Va.
Rasband, James Edwin	Wash.
A.B. 1953, Brigham Young University	
Rasch, William Henry, Jr.	Md.
Rasmussen, David	Va.
Rasmussen, Paul Christian	Mich.
A.B. 1948, LL.B. 1951, University of Michigan	
Rasmussen, Walter Samuel	Va.
B.S. in C.E. 1933, University of Wisconsin	
Rassow, Minna Marie	Md.
Ratcliff, Richard Laird	D.C.
A.B. 1957, University of Colorado	
Rath, George Norris	D.C.
Ratino, John Manfred	Md.
Ratulangi, Samuel	D.C.
Ratzer, Erick Robert	Ill.
Raup, Ruth Mitchell	N.Y.
A.B. 1947, Barnard College	
B. Litt. 1952, Oxford University, England	
Rautiola, Norman Arnold	Mich.
B.S. in M.E. 1954, Michigan College of Mining and Technology	
Ravenscroft, Donald Rieke	Md.
B.S.L. 1950, LL.B. 1952, University of Nebraska	
Rawalay, Surjan Singh	India
B.S. 1956, Punjab University	
Rawicz, Leonard	D.C.
B.S. 1953, University of Connecticut	
Ray, Catherine Tissot	Md.
A.B. 1954, Swarthmore College	
Ray, George Franklin III	Md.
Ray, Hope Walker	D.C.
Ray, Jacqueline Elizabeth	N.C.
Ray, Noble	D.C.
Ray, Robert Sayers	Va.
A.B. 1948, A.M. 1950, Vanderbilt University	
Ray, Stephanie Reid	Md.
Ray, William Earl	Md.
Raybold, Robert Carl	Va.
Raybould, Thomas Merrill	D.C.
Raychaudhuri, Benoy Chandra	India
M.S. 1947, Dacca University	
Raymond, John Joseph	D.C.
B.S. 1952, Harpur College	
A.M. 1953, New York State Teachers College, Albany	
Raymond, Richard Lee	Va.
A.B. 1951, Swarthmore College	
M.S. 1956, Indiana University	
Raymond, Wanda Lou	D.C.
Rayner, Raymond Carlin	Va.
Raynolds, David R.	Conn.
A.B. 1949, Dartmouth College	
A.M. 1955, Wesleyan University	
Raywid, Alan	D.C.
A.B. 1952, Duke University	
LL.B. 1957, University of Michigan	
Rea, Frank Robert	Conn.
B.S. 1953, Providence College	
Rea, Nelle Crowley	Va.
B.S. 1939, Georgia State College for Women	
Rea, Ralph Randolph, Jr.	Ark.
Read, Max Ralph, Jr.	Va.
B.S. in M.E. 1938, Case Institute of Technology	
Ready, Dudley Thurston	N.Y.
A.B. 1954, Norwich University	
Reagan, Ruth Elaine	D.C.
Reagan, William Collins	Md.
Reaves, Robert Kirby	Va.
Reaves, Wilson Andrew, Jr.	D.C.
B.S. in C.E. 1952, University of Texas	
Reber, Marlen Elmer	Md.
A.B. 1941, Eastern Michigan College	
Rebosa, Constancio R.	D.C.
Rechtschaffen, Oscar Herman	D.C.
B.S. 1956, University of Maryland	
Rector, Alfred Rozier	Md.
LL.B. 1952, American University	
A.B. in Govt. 1955, The George Washington University	
Rector, Ralph Gordon	W.Va.
Redd, Diana Burk	Md.
Redd, John VI	Md.
Reddick, Donald Henry	Md.
A.B. 1952, Ed.M. 1953, University of Maryland	
Reddig, Dorothy Jean	Va.
Reddig, Janice	N.Y.
A.B. 1957, Wellesley College	
Redler, Welfred Morton	Md.
B.E.E. 1953, The George Washington University	
Redmon, Robert Raymond	Mich.
B.S. in I.E. 1955, University of Michigan	
Redmond, Jack W.	Ind.
Redmond, Vance Raphael	D.C.
Reece, James Stillman	Va.
B.S. 1955, Memphis State College	
Reechareon, Prasert	D.C.
Reed, Benjamin Victor	D.C.
A.B. 1949, Clark University	
Reed, Louise Leick	Va.
A.B. in Ed. 1956, The George Washington University	
Reed, Robert Hammond	Colo.
B.S. 1954, The George Washington Universtiy	
Reed, Waldo Ray	Va.
Reed, William Leroy, Jr.	Md.
B.E.E. 1951, The George Washington University	
Reeder, John Harvey	Pa.
A.B. 1957, University of Florida	
Reedy, Barbara Ann	Va.
Reedy, Sandra Jane	Mass.
Rees, Sherman James	Md.
B.S. 1936, Springfield College	
A.M. 1938, Columbia University	
Reese, Allison	Md.
A.B. 1950, Gettysburg College	
Reese, Howard Charles	Md.
A.B. 1940, A.M. 1956, New York University	
Reese, James Clinton	Md.
Reese, Marvin R., Jr.	Va.
B.E.E. 1954, Clemson College	
Reese, Thomas Hamlin	Va.
Reeser, Ralph Raymond	D.C.
A.B. 1955, University of Washington	
Reeves, Loretta Mae	D.C.
Reeves, Ronald Kenneth	Md.
Regalado, Ernesto Alfredo	D.C.
Regan, Nina Kathryn	N.C.

Regidor, Robert	D.C.
Regis, Brother Benoit	Canada
A.B. 1942, A.M. 1948, Montreal University	
Rhemeyer, Richard Curtis	Pa.
A.B. 1957, Haverford College	
Reich, Marvin	Md.
B.S. 1953, Polytechnic Institute of Brooklyn	
Reich, Naomi Freema	Md.
Reichgut, Martin Hugh	D.C.
Reichow, Estelle Vernon	D.C.
Reid, Annie Thompson	D.C.
B.S. 1943, Simmons College	
A.M. 1944, Boston University	
Reid, Conrad Sanford	Va.
Reid, Jeanne Marie	Md.
B.S. 1945, University of Alabama	
Reid, Mabel Jean	N.C.
Reid, Neal Evan	Va.
Reid, Penelope Anne	Va.
Reidy, Kathryn G.	Md.
B.S. 1936, Ed.M. 1948, University of Maryland	
Reifel, Natalie C.	D.C.
Reifsnyder, Sally Evans	D.C.
A.B. 1950, The George Washington University	
Reilly, James Donald	N.J.
B.S. 1954, Franklin and Marshall College	
Reilly, James Francis	Md.
Reilly, James Thomas	Pa.
Rein, Selma Rice	D.C.
B.S. 1933, Brooklyn College	
Reining, Robert Royce, Jr.	Va.
Reinke, Maynard Ray	Iowa
B.S. 1957, Iowa State College	
Reinwald, Barbara Helen	D.C.
Reinwald, Lewis T.	Ohio
A.B. 1947, Ohio University	
A.M. 1949, Clark University	
Reis, Anthony Edward	Mich.
Reis, Robert Leonard	N.J.
Reiskin, Joel Alvin	D.C.
Reisner, Ralph	Wash.
A.B. 1952, University of Washington	
Reister, Henry Clay III	D.C.
A.B. 1954, Princeton University	
Relyea, Ann Lindbloom	Va.
A.B. 1952, University of Michigan	
Remillard, Alfrieda Ann	Germany
Remmus, Gene M.	D.C.
B.S. 1957, Doane College	
Rempe, James Henry	Md.
A.B. 1956, The George Washington University	
Remus, Madelon Jean	D.C.
Remus, Mildred M.	D.C.
Remus, Norma Ruth	D.C.
Rendler, Norbert Joseph	Md.
Renfrow, James Franklin	Md.
Renner, Arnold Edward	Va.
B.S. in E.E. 1954, Purdue University	
Renner, John Howard	Va.
A.B. 1954, Dartmouth College	
Renner, Robert Richard	Md.
Rennock, Eleanora Wilhelmina	Ill.
Reno, Raymond Howard	Ind.
A.B. 1949, A.M. 1950, The George Washington University	
Renstrom, Darrell George	Utah
B.S. 1955, University of Utah	
Rentch, Charles Lawrence	Va.
Renton, Gerald William	Va.
Reppen, Florence Ann	Va.
Resta, Mary Daphne	D.C.
Reuben, Eliahoo Menashy	R.I.
B.S. in C.E. 1952, University of Michigan	
Reuben, S. Jesse	Ohio
Reuther, Alfred Richard, Jr.	Mich.
A.B. 1956, Michigan State University	
Reuther, Daniel, Jr.	Fla.
B.S. 1957, University of Maryland	
Revetta, Adeline Porreca	D.C.
Revetta, Edith Ann	D.C.
Revollo, Eduardo	D.C.
Reyback, James Mackie	Md.
B.S. 1943, U. S. Naval Academy	
Reymer, Anna Rachael	D.C.
Reymer, Richard W.	Va.
Reynolds, David Eric	D.C.
Reynolds, Edward Thorpe	Va.
Reynolds, Robert	Calif.
A.B. 1949, University of California	
Reynolds, William Carter	Pa.
B.S. 1957, Swarthmore College	
Reznek, Deborah Adele	D.C.
Rhode, Alfred Shimon	Md.
B.C.E. 1950, College of the City of New York	
Rhodes, Cynthia Mason	Md.
Rhodes, Eric Foster	Va.
A.B. in Ed. 1950, A.M. in Ed. 1952, The George Washington University	
Rhodes, Harry Clement	Md.
B.S. 1935, Washington College	
Ed.M. 1948, University of Maryland	
Rhodes, James Joseph	D.C.
Rhodes, Kenneth Lee	D.C.
Rhodes, Linwood Adolph	Va.
Rhodes, Revis Gale, Jr.	Texas
B.S. 1954, Texas Technological College	
Rhodes, Robert Winters	D.C.
Rhodes, Walter Claud, Jr.	Va.
B.S. 1957, Central State College	
Rhudy, Margaret Hassler	D.C.
A.B. 1929, University of Alabama	
Rhodes, Ralson Raymond	W.Va.
Ricci, Sally Anne	Va.
A.B. 1956, The George Washington University	
Rice, Albert Watson	D.C.
B.S. 1934, Davidson College	
Rice, Benjamin Holt	Va.
A.B. 1957, University of Virginia	
Rice, Cecil Barth	D.C.
Rice, Charles Fenton, Jr.	Md.
Rice, Donald Harvey	D.C.
Rice, Edward Stephen	D.C.
A.B. 1940, Fordham University	
Rice, Eunice Fay	D.C.
Rice, Gordon	Va.
B.S. 1952, West Virginia State College	
Rice, Herbert Paul	Va.
B.S. 1925, U. S. Naval Academy	
Rice, Joseph Earl	D.C.
Rice, Joseph Fannin	Va.
B.S. in C.E. 1949, University of Kentucky	
Rice, Loren	Md.
B.S. 1950, Miami University	
M.S. 1954, Catholic University of America	
Rice, Mary Elizabeth	Maine
A.B. 1957, College of New Rochelle	

Rice, Peggy Goodwin D.C.
A.B. 1945, Bennington College
Rice, Vincent Russell Va.
Rice, William Stantley D.C.
A.B. 1946, A.M. 1947, Howard University
Rich, Vernon Eugene Ill.
Richards, Gerald Francis, Jr. N.Y.
B.B.A. 1956, Niagara University
Richards, Jack Elias Md.
Richards, James Cooper Va.
Richards, Lois Compton Va.
Richards, Margaret D.C.
Richards, Robert LeRoy D.C.
A.B. 1950, Kansas Wesleyan University
A.M. 1951, University of Kansas
Richards, Suzanne Virginia D.C.
A.B. 1948, J.D. 1957, The George Washington University
Richards, William Robert D.C.
Richardson, David James Texas
Richardson, Earle Conway Va.
Richardson, Earle Wesley, Jr. D.C.
Richardson, Ford, Jr. Va.
B.S. in C.E. 1940, West Virginia University
M.S. 1950, State University of Iowa
Richardson, Gloria Ann Va.
Richardson, Gloria Swann D.C.
B.S. 1953, Agricultural and Technical College of North Carolina
Richardson, Gordon Albert Md.
Richardson, Hattie Singleton D.C.
A.B. 1948, Howard University
Richardson, Henri Adrien D.C.
Richardson, Hugh O'Neal Ga.
Richardson, James Edwin, Jr. Va.
Richardson, Jean Truman Okla.
A.B. 1947, A.M. 1951, University of Oklahoma
Richardson, LaVerne Helen Calif.
A.B. 1956, A.M. 1957, The George Washintgon University
Richardson, Malcolm Lee Ga.
Richardson, Margaret Fields Fla.
Riche, Richard Wallace Colo.
A.B. 1956, University of Colorado
Riches, Leonard D.C.
Richey, Drake W.Va.
A.B. 1955, West Virginia University
Richie, Frank Gilbert Md.
Richman, Aaron Oscar D.C.
Richman, Eleanor Sue D.C.
Richmond, Milton Baldwin D.C.
B.S. 1940, Southwestern Louisiana Institute
Richmond, Paula Kay Wash.
Richter, Maxine Joyce Wis.
Richwine, Francis Kost Pa.
B.S. 1941, Pennsylvania State University
LL.B. 1949, LL.M. 1950, The George Washington University
Rick, Howard William Md.
B.S. 1948, M.S. 1949, Pennsylvania State University
Ricketts, Jack Ware Tenn.
B.S. 1950, Tennessee Polytechnic Institute
Riddell, Richard Ross Calif.
A.B. 1957, University of Southern California
Riddle, James Pa.
Riddle, John Lovell D.C.
B.S. 1950, University of Tulsa
Rider, Alan Joseph D.C.
Rider, Vincent William N.Y.
Ridgely, Neville Rush, Jr. Md.
B.S. 1942, Virginia Polytechnic Institute
Ridgely, Philip Alan Md.
Ridgeway, James Earl, Jr. Idaho
A.B. 1957, Northwest Nazarene College
Ridgeway, Paul Wilson W.Va.
A.B. 1934, Shepherd State College
A.M. 1939, West Virginia University
Ridgley, Mildred Burnett D.C.
B.S. 1939, Morgan State College
Ridgway, Robert Stephen Ill.
Riedl, Beatrice Cogan D.C.
LL.B. 1950, Brooklyn Law School
Rieger, Annette Va.
Rieger, Charles J., Jr. Va.
A.B. 1932, University of Louisville
Riegger, Nena Nettie D.C.
Riegger, William Joseph D.C.
A.B. 1942, Allegheny College
Riel, David Allen Wis.
Riess, Michael D.C.
B.S. in A.E. 1957, New York University
Rifkind, Bernard David D.C.
B.S. 1941, Temple University
Riggins, Wayland Henry Va.
B.S. 1956, Clemson Agricultural College
Riggle, Dorothy Pa.
Riggsby, William Stuart Ky.
Righter, Charles Emory Md.
B.F.A. 1950, University of Denver
M.S. 1954, Illinois Institute of Technology
Righter, Donald Lee Md.
Rigoulot, Arline Mae Calif.
A.B. 1937, Southwestern College
Riismandel, Vaino John Md.
Diploma in Law 1942, LL.M. 1943, University of Tartu, Estonia
Ph.D. 1945, University of Jena, Germany
M.C.L. (Am. Pr.) 1956, The George Washington University
Riley, Adah Frances D.C.
Riley, Arthur Ewing Md.
Riley, Constance Taylor D.C.
Riley, Dennis Joseph D.C.
Riley, Jonda Louise Md.
Riley, Robert Wayne Md.
Riley, Virginia Lee Mass.
Rilling, Phyllis Agnes Ariz.
Rimerman, Brooke M. Va.
Ring, James G. Wis.
Ring, Phyllis M. Va.
A.B. 1930, Ed.M. 1933, University New Hampshire
Ringbloom, Paul Eugene D.C.
Ringenbach, Maurice Eugene Md.
B.S. in E.E. 1948, Polytechnic Institute of Brooklyn
Riordan, Francis Va.
B.S. 1933, Tufts University
Riordan, John James Va.
Riordan, Stephen Joseph, Jr. Ore.
B.S. 1941, U.S. Naval Academy
Rios, Franklin D.C.
Ripley, Jocelyn Va.
Ripley, William Compton Md.
A.B. 1955, Syracuse University

Rippingale, John Bamforth Md.
Riseng, Ole Arne Jerome Va.
B.S. in M.E. 1955, M.S. in M.E. 1956, University of Michigan
Risher, Martha Ann D.C.
Risher, Maude Knight D.C.
Risk, Alice Frances D.C.
Risso, Maxine G. Va.
A.B. 1949, University of Arizona
Ritchie, Calvin Donald Va.
B.S. 1954, The George Washington University
Ritchie, Charles Robert Texas
Ritenour, Phyllis Drinkard Va.
A.B. 1949, Lynchburg College
Ritter, Charles Davis Texas
A.B. 1956, University of Maryland
Ritz, Marie Magdalen Pa.
A.B. 1957, The George Washington University
Ritzenberg, Bertha Yellen Va.
A.B. 1931, Hunter College
Ritzmann, Robert William Pa.
B.S. 1944, B.S. 1946, Pennsylvania State University
M.S. 1947, Carnegie Institute of Technology
Rivera, Harry Puerto Rico
Rivera, Ismael Puerto Rico
A.B. in Govt. 1956, The George Washington University
Rivlin, Lillian Md.
Roach, Robert Holden D.C.
Roark, Mary Trufant Va.
A.B. 1945, Tulane University
Robb, David Nelson Calif.
Ph.B. 1948, University of Chicago
Robbin, Jeannette D.C.
Roberts, Beverley Ford Va.
A.B. 1948, University of Virginia
Roberts, Billy Henry D.C.
B.S. 1953, Valdosta State College
Roberts, Bobbie Lee Va.
Roberts, Charles Franklin Wash.
A.B. 1957, Washington State College
Roberts, Charles Patrick Kans.
Roberts, Howard Richard N.Y.
B.S. 1955, M.S. 1957, The George Washington University
Roberts, Howard Stowe Fla.
B.S. in M.E. 1935, Purdue University
Roberts, James Frederick Texas
Roberts, John William, Jr. D.C.
Roberts, Lloyd Donald Va.
Roberts, Ola Jean Va.
Roberts, Richard Ray D.C.
B.S. in Ed., A.B. 1940, Northeast Missouri State Teachers College
Roberts, Robert D. Mo.
Roberts, Thelma Laurine Va.
Roberts, Thomas Duval Md.
B.S. 1924, U. S. Military Academy
Roberts, William A. Va.
Roberts, William Herman D.C.
Robertson, Darrin Va.
Robertson, Herman Walter, Jr. D.C.
B.S. 1955, Howard University
Robertson, James Colvert D.C.
B.S. 1957, University of Maryland
Robertson, Robert Lynn Va.
A.B. 1951, Shepherd State College
Robertson, Roy Michael Va.
Robey, Clarence Cox, Jr. Md.

Robey, Paul Andson, Jr. Va.
B.E.E. 1956, The George Washington University
Robinson, Charles Augustus, Jr. Va.
B.E.E. 1950, University of Virginia
Robinson, Claudine D.C.
Robinson, Edward George D.C.
Robinson, Elizabeth Freeman Md.
A.B. 1951, Limestone College
Robinson, Erika Lore Va.
Robinson, Florence Nordlie Fla.
Robinson, Frank William Va.
A.B. 1953, Emanuel Missionary College
Robinson, Geneva Standley Md.
A.B. 1951, The George Washington University
Robinson, Lester James, Jr. D.C.
Robinson, Lynn Roberta D.C.
Robinson, Margaret Elizabeth Va.
Robinson, Margaret Roebling Va.
B.S. in Ed. 1941, Teachers College of Connecticut
Robinson, Marilyn Roy D.C.
A.B. 1947, D.C. Teachers College
Robinson, Martha Treml Va.
A.B. 1944, University of Massachusetts
Robinson, Mary Duncan D.C.
B.S. 1941, D.C. Teachers College
A.M. 1949, New York University
Robinson, Owen Everett Md.
Robinson, Robert Edmund III D.C.
Robinson, Robert Henry Pa.
B.S. in Ch.E. 1956, Lehigh University
Robinson, Romaine Frances D.C.
A.B. 1946, A.M. 1948, Howard University
Robinson, Ruth Pierce D.C.
Robinson, Ruth Sweeney D.C.
A.B. 1923, Trinity College
Robinson, Sally Anne D.C.
A.B. 1949, A.M. 1950, Marshall College
A.M. in Ed. 1956, The George Washington Universtiy
Robinson, Thelma Alice D.C.
A.B. 1948, Tougaloo Southern Christian College
M.S. 1950, Howard University
Robinson, William Louis Va.
Robison, Ernest Bernard Md.
B.Ch.E. 1950, Catholic University of America
Robison, Rulon Douglas Idaho
B.S. 1955, Brigham Young University
Robson, Alfred Breedin, Jr. Fla.
Robuck, Walter Joseph Pa.
Rocca, Leonora Starr D.C.
Roche, George Thomas D.C.
Rochette, Richard Edward Va.
Rock, Anita Miriam D.C.
Rock, Peter Va.
Rockefeller, Marilie Wallace D.C.
A.B. 1951, Bryn Mawr College
A.M. 1955, The George Washington University
Rockelli, Gerald Herbert, Sr. D.C.
Rockoff, Maxine Lieberman Va.
Roczey, Patricia Ann D.C.
Rodbell, Arlene Faga D.C.
Rodden, Jack J. N.M.
Roddy, Thomas Patrick D.C.
B.S. 1957, Villanova University
Rode, Alex D.C.
Roderick, Mary Ellen Md.

Rodgers, David Arthur D.C.
Rodgers, Edward Clarence Va.
B.S. in E.E. 1957, Duke University
Rodgers, John Edward Va.
LL.B. 1949, Vanderbilt University
Rodgers, John Ferguson Ky.
A.B. 1956, University of Louisville
Rodgers, Joseph Thomas Md.
A.B. 1950, Kings College
Rodriguez-Amoros, Sara Puerto Rico
Rodriguez-Buenrostro, Amparo Spain
Rodriques, Frank Emil N.Y.
Roe, Virginia Mae D.C.
Roeber, Arlene Dorothy Minn.
Roehling, Barbara Lee W.Va.
Roehr, Virginia D.C.
Roemer, Derek Von Md.
Roets, Gerald Edward N.Y.
Rogers, Ann Elizabeth D.C.
Rogers, Edward Baldwin W.Va.
A.B. 1948, Shepherd State College
A.M. 1949, West Virginia University
Rogers, Edward Joseph, Jr. Md.
Rogers, Idahlia Siegel Md.
A.B. 1950, Goucher College
Rogers, John Torrey Mo.
B.S. in M.E. 1956, University of Colorado
Rogers, Kenneth Norman N.Y.
B.S. 1953, Ohio State University
Rogers, Mabel Ellen D.C.
A.B. 1947, Scarritt College for Christian Workers
Rogers, Preston Charles, Jr. Md.
A.B. 1949, Johns Hopkins University
M.S. 1956, The George Washington University
Rogers, Robert Lewis Md.
Rohall, Donald Earl Pa.
A.B. 1956, University of Pittsburgh
Rohall, Michael Richard Va.
B.E. 1951, Duquesne University
Rohlfs, Derrill Conway Md.
B.E.E. 1955, The George Washington University
Rohling, Hedwig Margarete D.C.
Rohrer, Gertrude W. D.C.
Rolinec, Rudolph Valentin Md.
B.S. in E.E. 1949, University of Pittsburgh
Roll, William Emanuel, Jr. Md.
Rollence, John Francis Md.
B.S. in B.A. 1952, University of Akron
Rolley, Raymond Charles Va.
A.B. 1950, West Liberty State College
Rollins, Anilee E. W.Va.
B.S. 1953, Concord College
Rollins, Lowell Charles Md.
A.B. 1955, Washington Missionary College
Rollins, Marie M. Md.
Rollins, Marilyn Patricia Mass.
Rollins, Raymond Lee Va.
Rollinson, Mark Tenn.
A.B. 1958, Duke University
Rolnick, Susan Lozowick D.C.
A.B. 1956, University of Michigan
Roma, Jully Colmanares India
Roman, Manuel N.Y.
A.B. 1954, New York University
Romanelli, Philip Joseph Pa.
B.S. in E.E. 1955, Drexel Institute of Technology
Romaniello, Barbara Alice Fla.

Romano, James Joseph, Jr. N.J.
M.E. 1956, Stevens Institute of Technology
Romanovski, Genevieve D.C.
A.B. 1937, University of New Hampshire
Rombold, Shirley Gaddis Kans.
Rome, Suzanne D.C.
Romeo, Carmel Latell Va.
Romeo, Joseph Paul Pa.
A.B. 1939, The George Washington University
Ronald, Margarette Lutz Md.
B.S. 1932, Farmington State Teachers College, Maine
Ronan, Roy Michael D.C.
Roney, Morton Va.
B.E.E. 1948, Clarkson College of Technology
Ronningen, Sharon Geoghegan Va.
Ronstadt, Elisa Ewing Md.
Roof, Florence Feaster S.C.
Roochuarg, Myron N.Y.
Roohan, James Francis, Jr. N.Y.
A.B. 1942, Michigan State University
Roohr, Albert Jerome Va.
B.C.E. 1952, Catholic University of America
Rooney, John Joseph Md.
Root, Eunice Maureen Ohio
Root, Robert Tallmadge D.C.
A.B. 1954, Harvard University
A.M. 1956, University of Minnesota
Roper, David Calhoun III D.C.
Roper, Frank Adams N.Y.
B.S. 1949, University of California
Roper, James Edward D.C.
Roper, John Howell Warfield Md.
Roper, John William D.C.
Ropp, George Hamilton W.Va.
A.B. 1937, Sheperd College
Ropshaw, Maxine Marilyn Va.
A.B. 1941, Miami University
Rosa, Rudolph Mass.
Rosa, Theodore Almada D.C.
Rosania, Joseph Anthony N.J.
Rose, Alexander Grant Md.
A.B. 1934, A.M. 1936, Wayne University
Rose, Harry Andrew Iowa
A.B. 1951, Drake University
A.M. 1954, University of Nebraska
Rose, James Monroe Md.
Rose, John Ernest, Jr. Va.
B.S. 1954, Illinois Institute of Technology
Rose, John Frederick William D.C.
Rose, Leslie Ira D.C.
Rose, Shep Kalman La.
B.S. in Phar. 1955, University of Georgia
Rosell, Emma Zita Cuba
Bachillerato 1950, Institute of Cuba
Rosen, Amichai Dov D.C.
Rosen, Doris B. Ohio
A.B. 1955, University of Michigan
Rosen, Gerald Stuart Md.
B.S. 1950, Michigan State University
Rosen, Hyman Md.
A.B. 1944, A.M. 1955, Columbia University
Rosen, Irwin Sol Va.
B.Ch.E. 1957, College of the City of New York

Rosen, Marvin H. D.C.
B.S. 1951, Pennsylvania State Teachers College
Rosen, Sam Md.
B.S. in Phar. 1950, The George Washington University
Rosen, William Calif.
Rosenberg, Doris May D.C.
Rosenberg, Harold Jay Md.
Rosenberg, Hyman Louis D.C.
A.B. in Govt. 1956, The George Washington University
Rosenberg, Ina Clare D.C.
Rosenberg, Irwin Jack D.C.
Rosenberg, Reva Rona D.C.
Rosenberg, Rita Finkel Md.
A.B. 1947, Florida Southern College
Rosenberg, Robert Daniel N.Y.
Rosenberg, Victor Jerome D.C.
Rosenblatt, Harry Myer Md.
B.S. 1948, M.S. 1953, The George Washington University
Rosenblum, Jerald Edwin Va.
B.S. 1956, Washington University
Rosenblum, Lois Marie Va.
Rosenborg, Tomas Olov D.C.
A.B. 1957, Ursinus College
Rosengarten, Johanne Clae N.Y.
Rosensky, Martin Bernard D.C.
Rosenstein, Joel Bruce D.C.
B.S. 1957, University of Maryland
Rosenthal, Elaine Posner Md.
Rosenthal, Suzanne Geist Va.
A.B. 1957, University of Wisconsin
Rosenwasser, Hyman Va.
A.B. 1936, Brooklyn College
Rosetta, Joanne Elaine D.C.
Rosnow, Ralph Leon Md.
B.S. 1957, University of Maryland
Roskos, Mary M. D.C.
B.S. 1953, Thiel College
Ross, Audry May Va.
Ross, Carole Margaret D.C.
Ross, Charles Bruce N.C.
Ross, Dolores Jean Md.
B.S. 1955, Maryland State Teachers College, Frostburg
Ross, Elizabeth Ann D.C.
Ross, E. Marie Miss.
Ross, James Ernest Va.
B.S. in Ed. 1954, Pennsylvania State Teachers College, Shippensburg
Ross, Joel Elmore Va.
A.B. 1946, Yale University
Ross, Johanne Va.
B.S. 1957, Mary Washington College
Ross, Juanita Marcella D.C.
Ross, Leah Edith Mass.
Ross, Leo D.C.
B.M.E. 1928, Northeastern University
LL.B. 1932, The George Washington University
Ross, Marion Thompkins D.C.
B.M.E. 1948, Howard University
A.M. 1949, Columbia University
Ross, Ralph Richard Ill.
B.S. in C.E. 1950, Oklahoma Agricultural and Mechanical College
Ross, Richard Louis N.Y.
Ross, Richard R. Md.
Ross, Ruth B. N.J.
A.B. in Govt. 1946, A.M. in Govt. 1951, The George Washington University

Ross, Shirley Kelso Calif.
A.B. 1939, Ohio Wesleyan University
Ross, William R. Wyo.
Rossi, Alessandro D.C.
Rost, John P. Md.
A.B. 1952, University of Pittsburgh
Rotert, Warren Herbert Va.
B.S. in I.E. 1952, Lafayette College
Roth, Bernice H. Pa.
B.S. 1957, Temple University
Roth, Dianne Margaret D.C.
Roth, Norman Harold Md.
B.S. 1949, Lehigh University
Rothberg, John Charles N.J.
A.B. 1953, Amherst College
M.P.A. 1957, Harvard University
Rothberg, Miriam Frances D.C.
Rothbone, Bryce Huntly Md.
Rothe, Bertha Margarethe Va.
A.B. 1934, A.M. 1935, B.S. in L.S. 1940 Syracuse University
LL.B. 1948, LL.M. 1956, The George Washington University
Rothermel, Sally Smith N.Y.
B.S. 1955, Western Maryland College
Rothery, Lillian Boswell Va.
Rothman, Gloria Ann Va.
Rothouse, Charles Va.
A.B. 1932, College of the City of New York
LL.B. 1935, Brooklyn College
Rothrock, Orville Joseph Mass.
A.B. 1953, Harvard University
Rothrock, Thomas Jefferson Va.
B.S. 1955, University of Maryland
Rothroy, John Alexander Muray D.C.
A.B. 1957, Johns Hopkins Univeristy
Rothstein, Seymour Ohio
B.S. in M.E. 1952, Case Institute of Technology
Rothuizen, Jasper Warner D.C.
Rotolo, Louis Samuel Md.
B.S. in E.E. 1951, University of Michigan
Rotz, Paul Elwood Pa.
Rouse, Jack Taylor Va.
A.B. 1933, Berea College
A.M. 1939, University of Kentucky
Rova, Paul Enos N.H.
Rovner, Clara D.C.
Rovner, Sara Pa.
Rowan, Michael Beatty Md.
A.B. 1952, A.M. in Govt. 1956, The George Washington University
Rowe, Allen Stanley Md.
Rowe, Henry Carlton Maine
Rowe, Hobart Eugene Va.
B.S. in E.E. 1930, Michigan State College
Rowe, Lynn Brockbank Utah
Rowe, Mary Carolyn Md.
Rowell, Stella D.C.
Rowell, Thomas Wesley Va.
Rowland, Emajean D. Md.
A.B. 1941, Denison University
Rowlands, Howard Pa.
A.B. 1956, Pennsylvania State University
Rowse, Katharine Louise Fla.
A.B. 1951, The George Washington University
Rowstadt, Sally Ewing Tenn.
Roy, Raymond Lionel Maine
A.B. 1953, Colby College

Roybal, Ben Frank N.M.
A.B. 1956, New Mexico Highlands University
Roybal, Kathryn Charlene N.M.
Royer, William Arthur Va.
B.S. 1947, Indiana University
Rozan, Stephen Warren N.Y.
A.B. 1957, Bethany College
Rozansky, Joan Lois D.C.
Rozar, Morris N.C.
B.B.A. 1956, Wake Forest College
Rozier, Joe Hampton Va.
Rozman, Robert Sanford Va.
B.S. 1955, The George Washington University
Ruben, Irwin D.C.
Rubenstein, Daryl Susan Md.
Rubenstein, Lee Garson Md.
B.S. 1957, University of Maryland
Rubin, Lonnie Bruce Md.
B.S. 1954, University of Maryland
Rubin, Melvin Richard N.J.
Rubin, Phyllis Carol D.C.
Rubin, Richard Arthur N.Y.
Ruble, Leonard Hite W.Va.
A.B. 1957, Shepherd State College
Rubler, Stanley Ivan N.Y.
Ruby, George B. D.C.
Ruckel, Neti W.Va.
Rudd, Alan Neal D.C.
Rudd, Ann Collier D.C.
Rudd, Gerald Ray Idaho
Rudd, Hilton Allen, Jr. Va.
Rudigier, Joseph Julius, Jr. Md.
B.S. in E.E. 1952, University of Maryland
Rudisill, John Calvin, Jr. Pa.
B.S. in E.E. 1956, Duke University
Rudman, Paul Lewis Maine
A.B. 1957, Yale University
Rudmann, Joseph Emmett Ohio
Rudo, Stanton Morton D.C.
Ruecroft, George Leroy Va.
Ruffner, Nancy Fitzgerald Md.
Rufty, Tazewell Fitzgerald Va.
Rugani, Peter Robert D.C.
A.B. 1951, New York University
A.M. 1955, Columbia University
Ruggles, June Catherine Mich.
Rugo, Alfred Joseph Md.
B.S. in E.E. 1949, University of Maryland
Ruifrok, Wilhelmus Jeronimus Md.
Ruiz, Elizabeth Md.
Rule, Ian Austin Christopher Va.
Rule, Robin Louise Va.
Rumke, Richard William Md.
B.C.E. 1957, The George Washington University
Rumley, Lucy Johnston D.C.
A.B. 1951, The George Washington University
Rumph, William Richard Fla.
Runge, Robert Lee Md.
A.B. 1957, University of Iowa
Rupp, Edward Hanna Md.
A.B. 1940, Franklin and Marshall College
Ed.M. 1954, University of Maryland
Rupp, Fred Burl, Jr. Ohio
Ruppel, Ann Houston D.C.
Ruppert, David Joseph D.C.
Ruppert, Eleanor P. Va.

Ruppert, Mary Patricia D.C.
A.B. 1957, Loretto Heights College
Ruppert, Thomas Otto, Jr. Va.
A.B. in Govt. 1957, The George Washington University
Rusche, Alvin Ernest S.D.
Rush, Albert Wallace Va.
B.S. 1952, Roanoke College
Rush, Robert Louis Md.
B.S. 1953, U.S. Military Academy
Russ, Kathleen Mercer Md.
B.S. 1936, Hood College
Russek, Joseph Matthew W.Va.
Russell, Bergetta Amanda D.C.
Russell, Carlton Eugene Calif.
B.S. 1952, U. S. Coast Guard Academy
Russell, Conrad Laird D.C.
Russell, James Miller D.C.
A.B. 1949, The George Washington University
Russell, John Frank Md.
Russell, John Franklin Md.
Russell, Lawrence III Nebr.
B.S. 1952, U. S. Military Academy
Russell, Lillian Bowman Va.
Russell, Robert Charles Md.
Russell, Ruthanne Va.
Russell, Sally Lee Franc
Russell, Stanton Best D.C.
B.M.E. 1949, The George Washington University
Russell, Vilena D.C.
B.S. 1930, M.S. 1945, University of Texas
Russell, William Don Ga.
Russell, Wylie Hayden Va.
A.B. 1944, Ed.M. 1948, Oklahoma City University
A.M. in Ed. 1953, The George Washington University
Russo, Mario Joseph D.C.
B.S. 1953, Lebanon Valley College
A.M. 1956, Columbia University
Russo, Matthew Joseph Mas
B.S. in E.E. 1956, Tufts University
Rust, James Henry, Jr. Md.
B.S. 1954, Franklin and Marshall College
M.S. 1956, The George Washington University
Rust, William David, Jr. D.C.
B.S. in C.E. 1954, Howard University
Rustam, Nancy Claire D.C.
Ruth, Celia Minton Va.
Ruth, Joseph Young Va.
A.B. 1949, The George Washington University
Rutledge, Elizabeth Jennings Ill.
A.B. 1956, Cornell University
Rutledge, Robert Clinton Va.
A.B. 1940, University of Virginia
A.M. 1957, The George Washington University
Rutsch, Edward Steven N.J.
Ruttgers, Clarissa Md.
Corso di Laurea in Science Politichs 1955, University of Torino, Italy
Ryan, Lloyd Frederick Va.
Ryan, Mary Dolores Md.
A.B. 1946, LL.B. 1949, The George Washington University
Ryan, Patricia Ann Md.
B.S. in Ed. 1955, Maryland State Teachers College, Towson

Ryan, Thomas Dies B.S. 1950, Oklahoma Agricultural and Mechanical College	La.
Ryback, Gilbert Roman B.S. 1950, M.S. 1953, University of Wisconsin	Va.
Rycoff, Deena Marcia	D.C.
Ryder, Loretta Pauline B.S. 1941, Emmanuel College M.S. in S.W. 1944, Catholic University of America	D.C.
Rydzik, Stanley Henry	Canada
Ryerson, Frank, Jr.	Md.
Ryerson, William Robert	N.J.
Rykhus, Douglas Joseph A.B. in Govt. 1951, The George Washington University	Md.
Ryman, Kermit Warren	D.C.
Rymarowicz, Victor Gregory	Pa.
Rynkiewicz, Raymond Stanley B.S. in M.E. 1955, Newark College of Engineering	D.C.
Ryon, Jane T. A.B. 1950, College of Notre Dame of Maryland	Md.
Rytlewski, Francis Leon B.S. 1953, Montana School of Mines	D.C.

S

Saah, Constance Z.	D.C.
Saah, Mohamed Amjad A.B. 1942, University of Punjab, Pakistan A.M. in Govt. 1957, The George Washington University	Pakistan
Saba, Vladimir Vratislav	D.C.
Sabel, August James	Wis.
Sabghir, Freddie Orleans B.S. 1944, Cornell University A.M. 1947, Columbia University	Mich.
Sacchet, Edward Michael	D.C.
Sacks, Allen Joel	Va.
Sacks, Stanley B.S. 1954, Queens College	Md.
Saddler, Jerry Carlos	Va.
Sadek, Mahmoud S. M.	D.C.
Sadler, Frederick T. B.S. 1944, California Institute of Technology J.D. 1957, The George Washington University	Calif.
Sadler, Lloyd Elwyn	D.C.
Safran, Betsy Joanne	N.Y.
Safrit, Helen Howard B.S. 1942, Coppin State Teachers College A.M. 1949, Howard University	D.C.
Sahagian, Ara Bud	Calif.
Sahami, Malek Mansour	D.C.
Saile, George Oscar B.Ch.E. 1951, University of Cincinnati	Ohio
Sain, Gloria Elizabeth	D.C.
St. Clair, Jean Ruth B.S. in Ed. 1939, University of Missouri	Mo.
Saint-Laurent, Brother Marie-Armand	Canada
St. Peter, Edwin James B.S. in M.E. 1939, University of Pittsburgh	Fla.
akach, Edward Charles	Pa.
akai, Shiuka	Va.
akata, Carl T. A.B. 1951, Grinnell College	Va.
Sala, Frank Joseph, Jr. B.S. in B.A. 1952, University of Nevada	Nev.
Salahi, Dirgham	Jordan
Salama, Elias	Argentina
Salameh, Janet A.B. 1951, Rollins College	Va.
Salazar, Hugo	Bolivia
Salazar, Richard Theodore	D.C.
Salcedo-Alvarez, Guillermina	Mexico
Salem, Irving A.B. in Govt. 1957, The George Washington University	D.C.
Salem, Marcia Bette	D.C.
Salimone, Anthony	Va.
Salins, Donald Jack B.S. 1954, D. C. Teachers College	D.C.
Salisbury, Barbara Jean	D.C.
Salive, Marcel Leon B.S. in Ch.E., B.S. in Met.E. 1958, University of Michigan	D.C.
Saller, Wayne Jack	Ill.
Salles, Sonia de Zito	Brazil
Sallet, Diase Wilkis	D.C.
Salman, Saad Yousif	Iraq
Salman, Raphael Jack B.S. 1953, Utah State Agricultural College M.S. 1954, Brigham Young University M.S. in P.H. 1956, University of North Carolina	Israel
Salmon, Rose Adell	D.C.
Salmon, Ruth Wexberg	D.C.
Salmon, Sylvia Janet	D.C.
Salter, Albert P., Jr. B.S. 1952, Canisius College	Md.
Salter, Sheldon Jerold	Md.
Salto, David Mario	D.C.
Saltus, David Ward B.S. 1946, A.M.T. 1948, Harvard University	Va.
Saltus, Kay Joanne	Va.
Salvi, Adelaide Priscilla	Md.
Salzberg, Charles	Va.
Salzberg, Karl Irvin B.S. 1952, Cornell University	Va.
Salzberg, Norman	Va.
Salzman, Franklin B.S. 1949, North Carolina State College at Durham	D.C.
Sammons, Elizabeth Mae	Ohio
Sampson, Charles Ernest	D.C.
Sampson, Harold Lynn B.S. in Ed. 1936, Maryland State Teachers College	Md.
Sampson, James Davis B.S.E. 1949, Agricultural and Technical College of North Carolina	Md.
Samson, Chester Page	Va.
Sanborn, Joseph G. Y.	Utah
Sanborn, Robert Lewis	Md.
Sanchez, Arsenio Fabian	N.M.
Sanchez, Leveo Victor A.B. 1954, New Mexico Highlands University	Va.
Sanchez, Louis John	N.M.
Sanchez, Patricia Ellen	Va.
Sandberg, Stephen Ray A.B. 1957, Stanford University	Md.
Sandeen, Charles Edward A.B. in Govt. 1953, The George Washington University	Va.
Sandefer, Sherry A.B. 1953, Louisiana State University	D.C.

Sandelmann, Margarita M. Va.
Sanders, Bernard D.C.
B.S. in C.E. 1949, Rutgers University
Sanders, Doris Wilma D.C.
Sanders, Joseph Thomas Ill.
Sanders, Laura Adrene Fla.
Sanders, Mary Henderson Fla.
A.B. 1923, Butler University
Sanders, Raymond Oscar Md.
B.S. in M.E. 1948, University of Rochester
Sanders, Rlene Maye Va.
Sanders, Roger Edward Ind.
A.B. 1951, Indiana University
A.M. 1957, Georgetown University
Sanderson, Agnes Isabel Gomez D.C.
Sandin, Vernon Kenneth D.C.
Sandison, Ernest F. Md.
Sandler, Brenda Lee D.C.
Sandler, Robert Morton D.C.
Sandler, Steven Carl D.C.
Sanford, Eugenia Laurence Va.
B.F.A. 1952, Richmond Professional Institute
Sanford, Hartwell Adams D.C.
Sanford, James Boyd Iowa
B.S. 1954, University of Maryland
Sanford, Merrill Merritt Fla.
B.S. 1936, U. S. Naval Academy
Sanford, Robert Joseph D.C.
Sanks, Emily D.C.
A.B. 1950, Knoxville College
Sanphy, Elizabeth Florence Maine
Sansalone, Victor Joseph Md.
A.B. 1956, Marietta College
Sanson, Carlos E. Nicaragua
A.B. 1953, The George Washington University
Santos, Antero Velado Mass.
Santos, Nora Limcaoco Phillippines
Santos, Vincente Cruz Phillippines
LL.B. 1953, Ateneo de Manilla
Sapardiman, Soeseno D.C.
Sapienza, Phyllis Kershaw D.C.
Mus.B. 1936, University of Rochester
Sapilouski, Albin Md.
Saporito, Anne Houghton D.C.
Sarab, Allen D. N.Y.
A.B. 1957, Hunter College
Saragoza, Savas Texas
Saraniero, Gioconda Rita D.C.
B.S. 1931, New York University
M.D. 1935, Woman's Medical College of Pennsylvania
Sargon, Vic Md.
Sari, Anne Virginia D.C.
Sarris, Milton M. Va.
A.B. 1950, West Liberty State College
A.M. 1951, West Virginia University
Sartain, William Gundling D.C.
Sartain, Winifred Ann D.C.
Saslaw, Shirley Marcia Va.
Sass, Margaret Ann D.C.
A.B. 1956, College of the Holy Cross
Sassman, Joe Murray D.C.
Saul, Howell Jay N.Y.
A.B. 1953, The George Washington University
Savage, Arthur Paul Va.
B.S. in Eng. 1956, The George Washington University

Savoy, Gloria D.C.
B.S. 1952, D.C. Teachers College
Sawyer, Douglas Arthur Md.
Sawyer, Norman Marshall D.C.
B.S. 1949, U. S. Coast Guard Academy
Sawyer, Robert Emerson, Jr. Va.
Sax, Edward D.C.
A.B. 1949, Wayne University
Saxe, Jon Sheldon N.Y.
B.S. in Ch.E. 1957, Carnegie Institute of Technology
Sayers, Bill Keith Md.
A.B. 1951, Texas Technological College
Saylor, Ronald Denton D.C.
Scalf, Robert Edward Va.
A.B. 1953, Wake Forest College
Scanlan, George Michael N.Y.
B.S. 1956, Manhattan College
Scanlon, Thomas Patrick D.C.
B.C.E. 1949, Villanova University
Scarfe, George Orrin D.C.
Scarfi, Anthony John N.Y.
Scates, Alice Yeomans N.J.
B.S. 1936, New Jersey State Teachers College, Glassboro
Ed.M. 1950, Duke University
Scearce, William Russell, Jr., Va.
Schachner, Julian Ariz.
B.S. in M.E. 1956, University of Arizona
Schachter, Miriam N.Y.
Schaefer, Leslie George Md.
Schaefer, William Theodore D.C.
Schafer, David Lloyd Minn.
Schaffner, Martha Louise D.C.
A.B. 1957, University of California
Schamerhorn, Paul Albert D.C.
Schaper, Donald Dale Kans.
B.S. 1954, Kansas State College
Schatten, Ivan Charles Pa.
B.S. 1950, University of Pittsburgh
Schaub, Kathleen Marie Va.
B.S. 1955, University of Illinois
Schaub, Sharlene Irwin Va.
Schauraloff, Andrew N.Y.
Scheer, Mary Johanna Va.
Scheetz, Karl Germain Pa.
B.M.E. 1957, Villanova University
Scheffrin, Richard Edward D.C.
B.S. in Phar. 1949, The George Washington University
Scheider, John Robert N.J.
Scheiner, Marian C. D.C.
Schellenger, Marshall Leeds N.J.
A.B. in Ed. 1957, The George Washington University
Scheltema, Johannes Lorenzo Md.
Scheps, Bernard Beryl Va.
Scher, Stanley Ivan Md.
A.B. 1957, American University
Scherer, Edward Underwood Pa.
B.S. 1955, Haverford College
Scherff, James Herbert Nebr.
Scherzer, John A. III D.C.
Scheurell, John Edward Va.
Schick, Irvin Henry Pa.
Schick, Shirley Jean Minn.
A.B. 1957, St. Olaf College
Schiffman, Elliott Conn.
B.S. 1957, Yale University

Schiffman, Harvey Richard A.B. 1957, The George Washington University	Mass.
Schiffman, Harold B.E.E. 1951, The George Washington University	D.C.
Schiffman, Shielamarie Mary	Va.
Schildnecht, Sandra Carver A.B. 1957, Gettysburg College	Pa.
Schiller, Arthur Michael A.B. 1953, University of Illinois	Ill.
Schiller, Jacqueline Benet	Md.
Schiller, Raymond Claude	Md.
Schiller, Sidney Phyllis	Ill.
Schilling, Hayden William	D.C.
Schimelpfenig, Dorothy Marie	Va.
Schinina, Emanuel George B.S. in Ed. 1949, College of the City of New York A.M. 1950, New York University	Va.
Schlageter, Karen Lani	Va.
Schlang, William Robert	Va.
Schlapo, George Gregory	Md.
Schlausky, Julius C. B.S. 1950, University of Maryland	Md.
Schleikorn, Lee R.	Pa.
Schleiter, Thomas Gerard B.M.E. 1953, University of Detroit M.S. in M.E. 1954, M.S. in E.M. 1955, University of Michigan	Ill.
Schlemm, Norman H., Jr. B.S. 1948, Franklin and Marshall College	Md.
Schlesinger, Melvin Isadore B.S. in M.E. 1949, University of Pittsburgh	Md.
Schlesinger, Patrick Jerome B.S. in E.E. 1957, University of Oklahoma	Okla.
Schlissel, Martin Stephen	D.C.
Schlom, Leslie	N.Y.
Schlossberg, Mary Coleman A.B. 1949, University of Chicago A.M. 1957, Johns Hopkins University	D.C.
Schlosser, Courtney Dorian	Md.
Schlotzhauer, Wesley, Jr.	D.C.
Schmeeckle, Roger L. A.B. 1951, St. Thomas College	D.C.
Schmid, Joseph H.	Mich.
Schmid, Karl Brooks	Del.
Schmid, Otto, Jr. B.E.E. 1953, Georgia Institute of Technology	Tenn.
Schmid, Sylvia Maria B.S. 1956, The Geoorge Washington University	D.C.
Schmidt, Dorothy Augusta	Md.
Schmidt, Erik Bach A.B. 1951, Cornell University	N.Y.
Schmidt, George Andrew B.M.E. 1956, Rensselaer Institute of Technology	N.Y.
Schmidt, Manfred J. A.B. 1951, Roosevelt University	Md.
Schmidt, Richard Huestis A.B. 1954, Middlebury College	Vt.
Schmidt, Robert Milton B.B.A. 1951, M.B.A., LL.B. 1954, University of Michigan	Mich.
Schmidt, William Albert	D.C.
Schmidtlein, Frank Allen B.S. 1954, Kansas State College	Wash.
Schminke, Victor Edward II	Md.
Schmitt, Carl Hubert	D.C.
Schmitt, Conrad	Md.
Schmitt, Frederick Joseph III A.B. 1953, Gettysburg College	Va.
Schmitz, Ethyl Mary	D.C.
Schmitz, Frances Bernhardt	D.C.
Schmitz, Richard Paul B.S. 1950, Missouri School of Mines	Md.
Schmoke, Harold Louis B.S. 1949, Shaw University	D.C.
Schmude, Richard Willis A.B. 1953, University of Michigan	Mich.
Schnack, Dermot Joseph A.B. in Ed. 1957, The George Washington University	D.C.
Schnack, George Albert	Va.
Schnarr, Margaret Rose	N.J.
Schneck, Nancy McDaniel A.B. in Ed. 1956, The George Washington University	D.C.
Schneiberg, Harold Sidney A.B. in Govt. 1957, The George Washington University	D.C.
Schneider, Alan Richard	N.Y.
Schneider, C. Suzanne	Pa.
Schneider, Gerald Arthur B.S. 1956, College of William and Mary	N.Y.
Schneider, Nancy Jane	D.C.
Schneider, Robert H. A.B. 1937, LL.B. 1939, The George Washington University	Va.
Schneider, Rochelle Grossman A.B. in Ed. 1957, The George Washington University	D.C.
Schnepfe, August William, Jr.	Md.
Schnepfe, Marian Moeller B.S. 1953, The George Washington University	N.C.
Schneyman, Arthur Henry B.Mgt.Eng. 1950, Rensselaer Polytechnic Institute	Va.
Schnoor, Kirke Gilbert	Md.
Schock, Carlyle William	D.C.
Schoefer, Gilbert Roland A.B. 1955, Stanford University	Calif.
Schoen, Beatrice Bee	D.C.
Schoenberg, Ann Hoffman	Va.
Schoenburg, Loren	Calif.
Schoenfeld, Aida Reid	D.C.
Scholl, Phoebe Kent A.B. 1943, Juniata College	Va.
Schonberger, Claude Marvin A.B. 1954, The George Washington University	Md.
Schooley, Russell T. A.B. 1954, University of Nevada	Nev.
Schoonmaker, Earl Frederick A.B. 1957, Wagner College	Md.
Schotanus, William Peter	Mass.
Schraml, William Foster	N.Y.
Schramm, Ruth Marion	Va.
Schreiber, Clare Adel B.S. 1955, University of Illinois	Ohio
Schreiber, Elliott Harold A.B. 1956, Upsala College	Va.
Schremp, Magdalene Corbett	Md.
Schriver, Barbara Elizabeth A.B. 1957, The George Washington University	Va.
Schrock, Kathleen Margo	Ohio
Schroder, Mary Ellen	Ill.
Schroebel, Elva Lee	D.C.
Schroebel, Wilmer Willis	D.C.
Schroeder, John Phillip	Md.

Schron, Dean B.E.E. 1956, Rensselaer Polytechnic Institute	N.Y.
Schroth, Sylvia Victoria	D.C.
Schubert Ralph Carl B.S. in C.E. 1925, Cooper Union	Va.
Schuessler, Isabelle S.	Md.
Schuler, Bernard Charles	Va.
Schuler, Irene Melitta	Va.
Schull, Robert Scott A.B. 1957, Tulane University	N.Y.
Schulman, Doris Greenfield	Md.
Schulman, Margaret Belnick A.B. 1938, The George Washington University	D.C.
Schultheis, Charles William A.B. 1950, University of North Carolina	N.C.
Schultz, Carl Donaldson	D.C.
Schultz, Donald Otto	Md.
Schultz, Herman Pardee A.B. 1957, University of North Carolina	Md.
Schulze, Richard P., Jr.	D.C.
Schuman, Doris Sara	Md.
Schumann, Alfred William B.S. 1949, Lewis and Clark College	Va.
Schuppin, Kenneth Earl	D.C.
Schure, Conrad B.S. in I.E. 1952, Montana State College	Va.
Schurter, Maxine Ann A.B. 1944, Pomona College M.D. 1951, The George Washington University	D.C.
Schwab, Gerald A.B. 1951, Stanford University	D.C.
Schwadron, Martin Paul B.S. 1956, College of the City of New York	N.Y.
Schwandt, Ernst	D.C.
Schwartz, Anthony John, Jr.	Va.
Schwartz, Bella A.B. 1944, A.M. 1951, The George Washington University	N.J.
Schwartz, Carolyn Richman	D.C.
Schwartz, Charles H. B.S. in E.E. 1957, Drexel Institute of Technology	Pa.
Schwartz, Edward Saul	D.C.
Schwartz, Frank Menges B.S. 1956, Dickinson College	D.C.
Schwartz, Milton Allan B.S. 1938, College of the City of New York	N.Y.
Schwartz, Pearl Wolkinson	D.C.
Schwartz, Philip A.B. in Govt. 1952, The George Washington University	N.Y.
Schwartz, Richard Harvey	N.Y.
Schwartz, Sonya Rae	D.C.
Schwartz, Suzanne Karlin	Va.
Schwartzman, Rosalie Ann	D.C.
Schwarz, Meyer	D.C.
Schweitzer, Glenn Edwin B.S. 1953, U. S. Military Academy	Va.
Schwenk, Melvin Ramon A.B. 1955, Nebraska Wesleyan University	Nebr.
Schwenk, Norman Gary A.B. 1957, Nebraska Wesleyan University	Nebr.
Schwoerer, Ruth Louise B.S. 1936, D. C. Teachers College Ed.M. 1949, University of Maryland	D.C.
Scoll, Martha Gill A.B. 1943, Wellesley College	Va.
Scopino, John Anthony A.B. 1952, University of Maryland	Va.
Scorpil, Judith Ann	Iowa
Scott, Alexandra Howell	D.C.
Scott, Alice Manson A.B. 1950, University of Maryland	Md.
Scott, Bruce Chardone A.B. 1933, University of Chicago	Va.
Scott, Della Beidleman A.B. 1957, Howard University	D.C.
Scott, Drummond Lee	Va.
Scott, Edward William B.S. in M.E. 1944, Tufts College	Md.
Scott, Eileen Mary	Va.
Scott, Evelyn Clair A.B. 1940, Northwestern State College of Louisiana	Md.
Scott, Jean Esther	Va.
Scott, Jean Magnolia A.B. 1957, The George Washington University	D.C.
Scott, John Wylie	N.Y.
Scott, Kenneth John A.B. 1951, Harvard University	D.C.
Scott, Marjorie Rugge A.B. 1942, Smith College	Va.
Scott, Michael Harvey	D.C.
Scott, Peter Lawrence A.B. 1956, Villanova University	N.J.
Scott, Robert Mitchell B.E.E. 1940, Brooklyn Polytechnic Institute	Va.
Scott, Ruth Maxwell A.B. 1942, West Liberty State College	D.C.
Scott, Sarah Lou	Va.
Scott, Shirley Lynn	Va.
Scott, William Haines, Jr. B.Arch. 1956, University of Florida	Md.
Scozzafava, John Gill A.B. 1954, College of the Holy Cross	N.Y.
Scragg, Wilma Joyce	W.Va.
Scrivener, Carl Donald	Mass.
Scrivener, Helen Ginnavan A.B. 1957, Huntingdon College	Ala.
Scrivener, Mary Elizabeth	D.C.
Scull, Jonathan Albert	N.Y.
Scurlock, Herbert Smith A.B. 1947, Howard University	D.C.
Seabury, Marion Marcella	Mass.
Seagers, Robert Guvan	Va.
Seal, Morgan Swain B.S. 1949, M.S. 1951, The George Washington University	Va.
Seale, John Arthur A.B. 1943, The George Washington University	Texas
Search, Harry Edwin A.B. in Ed. 1956, The George Washington University	Va.
Sears, Jere William A.B. 1950, Harvard University	Md.
Sears, Mary Helen A.B. 1950, Cornell University	Va.
Sears, Robert Whitfield B.S. 1943, Indiana State Teachers College	D.C.
Sears, William Brewster	Md.
Seaton, Sonia Fay	Md.
Sebade, Donald Henry A.B. 1957, The George Washington University	N.Y.

Sebastian, Arturo Almazan Philippines
B.Litt. 1953, LL.B. 1956, Ateneo de
Manila
Sebastian, Leland Ancel Ark.
B.S. 1952, Arkansas State Teachers
College
Sebert, Louis Mason Va.
A.B. 1940, University of Toronto
Sebol, Edward Ronald D.C.
Sebrell, Kenneth Eugene Ohio
A.B. 1955, Ohio State University
Seck, Gordon Eugene Calif.
B.S. 1953, University of California
Secrest, Nell Elizabeth D.C.
B.S. 1938, University of Minnesota
Secrist, Wilbur Lowell W.Va.
A.B. 1957, West Virginia University
Sederholm, Johan Edvard Sweden
M.Com. 1955, Gothenburg School of
Business Administration, Sweden
Sedgwick, Gail Franklin Va.
B.B.A. 1953, Washburn University of
Topeka
Sedlak, Mary Teresa N.Y.
B.S. 1954, Fordham University
Sedwick, Robert Curtis Md.
B.S. 1949, U. S. Coast Guard Academy
Seebaldt, Curtis Stanley Va.
B.S. 1956, University of Maryland
Seebode, Ida B. Va.
Seeger, Charles Ronald Ohio
B.S. 1953, Ohio State University
Seeley, James Albert Idaho
Seeman, Thomas Allison Pa.
B.S. 1957, Pennsylvania State
University
Sefcik, Anthony Michael D.C.
Seftel, LeRoy Allen N.J.
B.S. 1955, Rutgers University
Segal, Bernard Rubin D.C.
B.S. 1949, The George Washington
University
Segal, Elaine Esther D.C.
Segal, Joseph D.C.
Segal, Rena Greenblatt D.C.
Segar, Thomas Leitel, Jr. Va.
Segarra, Carlos O. Ecuador
Segnari, T. James D.C.
Sehgal, Satinder Parkash India
A.B. 1954, Mahindra College, India
Seidel, Claudene D.C.
A.B. 1953, Vassar College
Seidel, Julian Murray D.C.
Seidman, Richard Reynolds N.J.
A.B. 1955, Pennsylvania State
University
Seidole, James Merlin Va.
A.B. 1954, University of the South
Seigle, Paula Miriam D.C.
Seiler, Donald Waters, Jr. Va.
A.B. 1956, College of William and
Mary
Seixas, Mary Ann D.C.
Selden, Marguerite Carpenter D.C.
B.S. 1942, D.C. Teachers College
A.M. 1954, New York University
Selden, Virginia Barr D.C.
A.B. 1937, Smith College
Self, Charles Tyrus Md.
Sell, Glenn William D.C.
Sellers, Katherine Ashley D.C.
Selva, Noemi Nicaragua
A.B. 1957, Colegio Frances, Nicaragua
Semenowich, Marcella Mary Pa.

Semer, Charlene Esther Va.
A.B. 1955, The George Washington
University
Seminoff, Nicholas Michael Va.
Semones, Marcia Lynn Va.
Semonian, Edward, Jr. Va.
A.B. in Govt. 1955, The George
Washington University
Semyan, John D.C.
Senay, George Pa.
Senior, Frederick Bernard D.C.
Senior, Robert Morris N.Y.
A.B. 1957, Oberlin College
Senseman, Fleet Va.
Sepahpour, Afsaneh D.C.
Sepahpour, Ramin D.C.
Serber, Edna Jean D.C.
Serber, Michael D.C.
A.B. 1957, The George Washington
University
Serey, Paul Reynolds Md.
B.S. in F.S. 1953, Georgetown
University
Sergi, Apollonia Mass.
Seron, Richard Zaven Va.
Sessions, David Karl Va.
Setzler, Frank Perkins D.C.
Sewell, Homer Belk, Jr. N.C.
B.S. 1945, U.S. Naval Academy
Sewell, Norman Lewis D.C.
A.B. 1955, Morris Harvey College
Sexton, Osceola Cofield Va.
B.S. 1940, Alabama State Teachers
College, Florence
A.M. in Ed. 1952, The George
Washington University
Seymour, Sandra Angela D.C.
Shaed, Alice Evelyn D.C.
A.B. 1941, Howard University
A.M. 1949, Catholic University of
America
Shafer, Bonnie Jean D.C.
Shaffer, Arthur Garfield Va.
Shaffer, Charles Bernard Md.
Shaffer, John Scott Ohio
A.B. 1955, The George Washington
University
Shahid-Nooray, Gholam Hossein Iran
Shahin, Edward Joseph, Jr. D.C.
A.B. 1953, Cornell University
Shahinian, Mike Abraham D.C.
B.S. 1949, Richmond Professional
Institute
Shakewitz, Deanye D.C.
Shalala, Fred Joseph Ohio
Shaller, Herman I. D.C.
A.B. 1941, Brooklyn College
B.M.E. 1951, The George Washington
University
Shama, Gloria Ann D.C.
Shamir, Meir Israel
Shane, Robert Allen Va.
A.B. 1948, College of the City of
New York
M.B.A. 1951, Hofstra College
Shangle, James Montgomery Va.
B.S. 1950, Memphis State College
Shanks, Betty Lou D.C.
A.B. 1954, A.M. 1957, The George
Washington University
Shanks, Oscar Eugene, Jr. Md.
A.B. in Govt. 1949, The George
Washington University
Shanner, Richard Wendell Ill.

Shannon, Alice Marie	Md.
Shapiro, Frieda Sucher A.B. 1942, Brooklyn College	Md.
Shapiro, Harold B.S. 1953, Brooklyn College	Md.
Shapiro, Hyman Alex	Md.
Shapiro, Joan Adele B.S. 1955, Rutgers University	D.C.
Shapiro, Joseph Saul	Md.
Shapiro, Linda Irma	D.C.
Shapiro, Sidney Arthur A.B. 1956, Rutgers University	N.J.
Sharon, John Hurford A.B. 1949, Princeton University	Va.
Sharon, Wayne Alvin	Ind.
Sharp, Edward Given	D.C.
Sharp, Melvin B.S. in E.E. 1957, Drexel Institute of Technology	Pa.
Sharpe, Albert Pancoast III B.S. 1956, Case Institute of Technology	Ohio
Shaughnessy, John Joseph B.S. 1955, University of Maryland	Fla.
Shaver, Gale Vivian	Md.
Shavit, Amichai	Israel
Shaw, Allen Richland B.B.A. 1955, Detroit Institute of Technology	Mich.
Shaw, Clarence Grant	Md.
Shaw, Daryl Winston B.S. 1931, Pennsylvania State Teachers College Ed.M. 1936, Duke University	Md.
Shaw, John Sanford	Md.
Shaw, Linda Standish	Va.
Shaw, Mary Dolores B.S. 1954, Agricultural and Technical College of North Carolina	N.C.
Shaw, Milton B.S. 1951, U. S. Naval Academy	Md.
Shaw, Seth Thomas, Jr.	Va.
Shea, Gordon Frederick A.B. 1950, Syracuse University	Md.
Shea, Mary Elizabeth B.S. in H.E. 1957, The George Washington University	Conn.
Sheahan, Marguerite P. A.B. 1930, University of Maine	D.C.
Shear, Patricia Emily A.B. 1951, Western Maryland College	Va.
Shearer, Norville Eugene B.S. 1940, Iowa State College	Va.
Sheble, John Howard III A.B. 1942, Williams College	Va.
Shechtman, Jerry Elmer M.B.A. 1951, University of Chicago	Ill.
Sheedfar, Ismail Joseph	Va.
Sheehan, Barbara Ann	D.C.
Sheehan, John Joseph	Md.
Sheehan, Shirley Louise	D.C.
Sheer, Leon Gilbert	Md.
Shefferman, Ivan Jay B.S. 1954, University of Maryland	D.C.
Sheffey, Warren Albert B.S. 1951, Coppin State Teachers College	D.C.
Sheffield, William Hart A.B. 1957, Yale University	Calif.
Sheinis, Arnold B.S. 1948, College of the City of New York	D.C.
Sheldon, George Myron A.B. 1952, College of Idaho	Idaho
Sheldon, Phyllis Magers A.B. 1954, Southwest Missouri State College	Mo.
Sheley, Margaret Ann A.B. 1952, College of Wooster	D.C.
Shelhorse, Sarah Helen	Va.
Shellabarger, Marcia Jeannette	W.Va.
Shelley, Harold Desmond	D.C.
Shelton, Baker Omer A.B. 1928, Washington College	Va.
Shelton, Catherine Mary B.L. 1941, American University	D.C.
Shelton, Doris Imojean B.S. in Ed. 1956, University of Missouri	Mo.
Shelton, Jerry Raymons	D.C.
Shepard, Evan Tyler B.S. in E.E. 1935, U. S. Naval Academy	Conn.
Shepard, Robert Bennett B.M. 1957, Indiana University	Va.
Shepheard, Ursula	England
Shepherd, Francis William B.M.E. 1949, College of the City of New York M.S. in M.E. 1950, University of Minnesota	Md.
Shepherd, Roger Edward	Va.
Shepro, Merrill James B.S. 1944, D.D.S. 1945, M.S. 1947, University of Illinois	Ill.
Sherard, Virginia Mae A.B. 1950, A.M. in Govt. 1951, The George Washington University	Texas
Sherby, Thomas Anthony B.M.E. 1956, Clarkson College of Technology	N.Y.
Sheridan, Bernard Joseph	Va.
Sheridan, Christine Bertsch A.B. 1952, New Jersey State Teachers College, Montclair	Va.
Sheridan, William James	N.J.
Sherling, Fred Willie B.S. 1957, University of Tennessee	Tenn.
Sherman, Chloe	Va.
Sherman, Edward Lawrence A.B. 1951, A.M. 1953, Roosevelt University	Ill.
Sherman, Harvey Richmond A.B. 1950, University of Colorado	Va.
Sherman, Irving	N.Y.
Sherman, Sheldon	Md.
Sherman, Stanley Morton B.S. 1956, University of Maryland	D.C.
Sherman, William Louis B.S. 1953, University of Maryland	Va.
Sherr, Stanley Irwin B.S. 1957, The George Washington University	D.C.
Sherron, Norwood Ennis	Md.
Sherry, Vincent Jerome A.B. 1951, Western Kentucky State Teachers College	Ky.
Sherwood, Bernice Wendt	Md.
Sherwood, Richard Burr	Mich.
Sheva, Alfred Joseph	Md.
Shields, Daniel Wooley A.B. 1949, Princeton University	Md.
Shields, John Quentin B.S. 1954, University of Pittsburgh	Va.
Shields, Laurence Floyd	Maine
Shields, Mary Dorothea	D.C.
Shields, Robert Kenneth	D.C.
Shields, Thomas Esidore B.S. in B.A. 1954, Ohio State University	Ohio
Shifflett, Edna Mae Compton	Va.

Shifflett, Ernest Rodney Md.
A.B. 1957, The George Washington
University
Shiflet, Paul Wilson Va.
A.B. 1936, Bridgewater College
Shifrin, Harris David D.C.
Shimabukuro, Kazud Hawaii
Shimkin, Mary North Md.
A.B. 1936, Vassar College
Shimoda, Masaru Md.
Shin, Mya Saw Burma
A.B. 1952, B.L. 1955, University
of Rangoon, Burma
Shinn, Mi Yang Korea
Shinn, Sheila Elizabeth Va.
Shipe, Archie Kendall D.C.
B.S. in B.A. 1953, Georgetown
University
Shipler, James Parker D.C.
Shipley, Carl Keith Ark.
Shipman, George A. Pa.
Shipman, Robert Jack W.Va.
A.B. 1955, West Virginia University
Shipp, Ralph Earl Md.
Shirk, Gilbert LaRue Pa.
Shirley, Lance Stephen Md.
Shiroishi, Katashi Ken Md.
B.S. 1954, Purdue University
Shirven, Raymond Michael D.C.
Shiver, Jube Burrell, Sr. Va.
A.B. 1953, Virginia Union University
Shiver, Mildred L. Va.
Shneideron, Sara Anatol D.C.
Shockley, Billy Lewis D.C.
Shoemaker, Charles Erwin Md.
Shoemaker, Franklin Sherman Va.
Shokouhian, Mohammad Ali Iran
A.B. 1947, University of Tehran
Sholes, De Salse Christine Marie D.C.
Shomette, Louis Edwin, Jr. Md.
B.S. 1953, Georgetown University
Shook, Marcus Boyd D.C.
Shores, Sidney Tyler, Jr. Md.
Shorey, Martha Parke D.C.
Shorr, Erwin Howard Md.
Shorr, Walter Robert N.Y.
A.B. 1957, Brooklyn College
Short, Daniel Patrick Va.
Shott, Millie Stajcar Md.
A.B. 1955, Montana State College
Shott, Roger Jacobson D.C.
Shotwell, Grant Scott Ohio
Shoup, Robert De Haven Va.
Shouse, Laura Jane D.C.
Showalter, Carl Rolston Va.
B.S. 1951, Madison College
Showalter, Ruth Howell Md.
B.S. 1936, Radford College
A.M. in Ed. 1951, The George
Washington University
Shreve, Daniel Trundle Md.
Shriver, Spencer Alan W.Va.
Shropshire, Juanita Patricia D.C.
B.S. 1954, D.C. Teachers College
Shropshire, Walter Allen, Jr. D.C.
B.S. 1954, M.S. 1956, The George
Washington University
huck, Herbert Orten Md.
huck, Lyle Gordon D.C.
uken, Robert Egdal D.C.
ulman, Edwin Herbert D.C.
B.S. 1958, University of Maryland
ulman, Franklyn Charles D.C.
ultz, Richard Stephen Md.

Shumate, Barbara Carmitchel D.C.
Shumate, James Wheeler Md.
B.S. 1947, Salem College
A.M. 1950, West Virginia University
Shupe, Walter Carle Kans.
A.B. in Govt. 1944, The George
Washington University
Shuster, Seymour Norman D.C.
Shutts, Anne Clarke Va.
A.B. 1928, Hunter College
Shwe, Maung Hla Burma
Shworles, Thomas Robert Ill.
A.B. 1956, Catholic University of
America
Sibley, Alden Kingsland Mass.
B.S. 1933, U. S. Military Academy
A.B., B.S. 1936, A.M. 1943, Oxford
University, England
Sibley, Jimmie Lee Texas
B.B.A. 1948, University of Houston
Sibul, Leon Henry Md.
Sidel, Jerome Mark D.C.
B.S. 1957, University of Connecticut
Sidenberg, Lois G. D.C.
A.B. 1956, Stanford University
Sides, Linda McKinney D.C.
Siegel, Cynthia Iris D.C.
Siegel, Harry M. Va.
Siegel, Julian Lee Md.
B.S. 1954, The George Washington
University
Siegel, Mary Agnes D.C.
Siegelbaum, Leon Md.
A.B. 1940, Columbia University
Siegemund, Ralf Hermann Artur D.C.
Diploma Geophysiker 1950, University
of Berlin, Germany
Siepman, Norma Katherine D.C.
B.S. 1957, The George Washington
University
Sies, Luther Frank D.C.
A.B. 1948, Ed.M. 1954, Western
Maryland College
B.S. 1950, Maryland State Teachers
College, Towson
Sigalos, George Louis N.Y.
A.B. 1955, Lafayette College
Sigalos, John Louis Va.
B.S. 1949, Cornell University
Sigler, Joan Myers Va.
B.S. 1952, Butler University
Sigman, John Phillip Va.
Sigmon, Richard Roland Md.
LL.B. 1957, University of Maryland
Sigmund, Donald William D.C.
Signorelli, Joseph Anthony N.J.
B.S. 1954, Webb Institute of Naval
Architecture
Silas, Richard Alvin D.C.
Silberman, David James Va.
Silberman, William Charles Md.
Sileo, Michael Anthony, Jr. N.J.
Silliphant, Elizabeth Ann Md.
Sills, Patricia Earl Md.
Sills, Stephanie Esther D.C.
Silva, Carlos Alberto D.C.
B.S. 1956, University of Puerto Rico
Silva, Jorio Dauster Magalhaes Brazil
Silver, Clara Meyerovitch D.C.
Silver, Robert Francis Va.
A.B. 1953, University of Virginia
Silverman, Frieda D.C.
Silverman, Mark Donald D.C.
Silverman, Miriam Anne D.C.

Silverman, Rhoda Erma D.C.
A.B. 1939, Wheaton College
Silverstein, Irene M. Md.
B.S. 1952, University of Minnesota
Silverstone, Kenneth Jerome D.C.
Silvester, Edward McGuire Va.
B.S. 1954, University of Pennsylvania
Silvester, Gisela Stephanie Va.
Simmons, Annie Violet D.C.
Simmons, Carol Ann D.C.
Simmons, Clara Ina Md.
A.B. 1927, Baylor University
A.M. 1932, Columbia University
Simmons, Kathleen Eleanor D.C.
Simmons, Kenneth Grant Ill.
B.S. 1940, U. S. Naval Academy
Simmons, Marvin Boyd D.C.
Simmons, Patricia Ann D.C.
Simmons, Ralph Allison Md.
B.S. 1949, University of Maryland
Simmons, William James, Jr. Va.
B.S. 1957, University of Pittsburgh
Simms, Absalum Md.
B.N.S. 1945, B.S. in M.E. 1947,
Tufts University
Simon, Catherine Jeanne Va.
Simon, John Fritz Mo.
Simon, Rudolf Karl Va.
Simon, Walter Franklin D.C.
Simonovich, Sheldon Keith Va.
Simons, Elias Naudain III D.C.
A.B. 1955, Washington and Lee
University
Simons, George Washington Md.
Simons, Howard Alan Va.
A.B. 1951, Union College
M.S. 1952, Columbia University
Simpkins, Ruth Edward Va.
Simplicio, Antonette D.C.
Simpson, Donald Keiser Va.
Simpson, George Aloysius Md.
A.B. 1953, Georgetown University
Simpson, Janet Ill.
A.B. 1954, The George Washington
University
Simpson, Joseph Va.
A.B. in Govt. 1950, The George
Washington University
Simpson, Joyce Anne Pa.
B.S. 1956, Pennsylvania State
University
Simpson, Lloyd A. Md.
Simpson, Nathaniel Edward Va.
A.B. 1954, The George Washington
University
Simpson, Othell Mock Tenn.
B.S. 1957, Tennessee Polytechnic
Institute
Simpson, William Harvey Md.
Sims, Columbus Mackey Hawaii
Sims, Edgar, Jr. Va.
B.S. 1951, East Tennessee State College
Sims, Edwin Roe Ga.
Sinaga, Edward Djanner Indonesia
A.B. 1956, University of North
Sumatra
Sinal, Izin A. Turkey
Sinclair, Jean Marie N.J.
Sincoff, Richard Joseph Md.
A.B. 1956, The George Washington
University
Singcharoen, Chavolalit Thailand
A.B. 1952, Chulalongkorn University
M.B.A. 1957, University of Texas

Singer, Allen Milton D.C.
A.B. 1952, The George Washington
University
Singer, Donald James Md.
B.S. 1956, Montana State University
Singer, Louis D.C.
A.B. 1934, Brooklyn College
A.M. 1936, New York University
Singer, Rita Joan D.C.
Singer, Solomon Md.
B.S. 1949, University of Miami
M.S. 1955, The George Washington
University
Singhouse, Mary J. D.C.
Singletary, Josephine D.C.
B.S. 1957, D.C. Teachers College
Singleton, Harold Dean Va.
B.S. in M.E. 1954, University of
Oklahoma
Singleton, Julius Knox Va.
A.B. 1941, Berea College
Singman, Henry Dick D.C.
B.S. in Phar. 1949, The George
Washington University
Singman, Marvin Paul D.C.
Sinrod, Donald Edward D.C.
Sippel, Kenneth Fred Va.
A.B. 1950, University of California
Siriano, Harold Joseph Va.
Sirkis, Samuel Paul D.C.
Siskin, Morley D.C.
Siskind, Joel N.Y.
Sisler, Orland Odell Ark.
B.S. in M.E. 1949, University of
Arkansas
Sithens, Lucille Edwards Md.
Sither, Charles Arthur Md.
LL.B. 1948, University of Kentucky
Sitton, Paul Lyon Ga.
A.B. 1948, Emory University
A.M. 1950, University of Pennsylvania
Sitton, Robert McConnell D.C.
Sivy, John Md.
B.S. 1948, University of Pittsburgh
Siwozat, Genevieve Pa.
Sjogren, Amenta Robeson D.C.
A.B. 1944, State University of Iowa
Skaff, Robert Habeeb W.Va.
A.B. 1955, West Virginia University
Skeen, William Waldo N.C.
A.B. 1955, University of North Carolina
Skeer, William Thomas Va.
A.B. 1957, University of Texas
Skellenger, David D.C.
A.B. 1951, University of Washington
Skidmore, Walter Harold W.Va.
Skidmore, Wesley Dean Md.
B.S. 1953, University of Utah
Skinner, James Evensen Nev.
B.S. 1957, University of Nevada
Skinrood, Lisa Jane Va.
Skirm, George Louis D.C.
A.B. 1952, American University
Skoda, Charles Thomas Va.
A.B. 1951, University of Pennsylvania
Skoler, George Atley N.Y.
B.S. 1952, American International
College
Skopic, Helen Frances Pa.
Skoug, Kenneth Nordly, Jr. Minn.
A.B. 1953, Columbia University
A.M. 1957, The George Washington
University

Skovran, Nicholas Pa.
B.S. 1950, M.S. 1952, Pennsylvania
State University
Slabach, Stephen Hall Okla.
B.S. 1957, Northwestern University
Slack, Jean Park D.C.
A.B. in Ed. 1955, The George
Washington University
Slacum, Emerson P. Md.
B.S. 1936, Washington College
Ed.M. 1939, Duke University
Slattery, David Anthony D.C.
B.S. 1948, Georgetown University
Slattery, Marion Myers Va.
B.S. in C.E. 1947, The Citadel
Slaughter, Ellen Stalling Md.
Slaughter, Evelyn Phoebe D.C.
Slavin, Richard Edward Md.
Slavin, Sheldon D.C.
Slepain, Rochelle Susan N.Y.
Slette, Darrell Roger Wis.
B.S. 1954, University of Wisconsin
Slickis, John Victor Md.
Slidell, Hallie Brooke D.C.
Slidell, Marie Louise D.C.
Slingluff, Margaret Talbott Md.
Sloan, Mary McNeil D.C.
Sloop, Richard Carlton Va.
B.S. in Ed. 1955, Madison College
Sloulin, Blanche Winifred D.C.
B.S. 1954, University of Wisconsin
Sluger, Jerry Michael Pa.
Sluk, Michael Pa.
Slye, Harry Lancaster Md.
Smackey, Thelma Ruth Conn.
Small, Charles Ellis Va.
Small, Dale Richard Mich.
B.Arch. 1951, University of Michigan
M.S. 1954, Massachusetts Institute of
Technology
LL.B. 1958, The George Washington
University
Smalling, Clayton Everett, Jr. Md.
Smallridge, Lawana Geraldine D.C.
Smallwood, Shirley Ann D.C.
B.S. 1953, D.C. Teachers College
Smallwood, Wayne Nelson D.C.
Smart, Emma Williams D.C.
B.S. 1952, D.C. Teachers College
Smart, Nick Va.
Smegal, Thomas Frank, Jr. Minn.
B.S. in Ch.E. 1957, Minnesota
College of Mining and Technology
Smethurst, Sarah Blair D.C.
Smiley, Jerry Coleman Tenn.
Smith, Abbie Oliver Md.
B.S. in P.E. 1953, The George
Washington University
mith, Alfred Emanuel Va.
B.S. in E.E. 1956, University of
South Carolina
mith, Allan D.C.
mith, Alma-Marie Ill.
mith, Althea Richardson D.C.
B.S. 1948, D.C. Teachers College
ith, Anita Davis Va.
ith, Archie Lee Md.
B.S. in Phar. 1955, M.S. 1957,
The George Washington University
ith, Arthur Everett, Jr. Pa.
th, Arthur William Mich.
S. in E.E. 1956, U.S. Air Force
Institute of Technology

Smith, Audrey Cornelia D.C.
A.B. 1955, The George Washington
University
Smith, Barbara Ann Md.
Smith, Barbara Gordon D.C.
Smith, Brian Douglas D.C.
Smith, Charles Nesbitt Md.
Smith, Clark Lee D.C.
Smith, Clinton Douglass Bannister Va.
Smith, David Forsythe Calif.
Smith, Donald Boutwell D.C.
A.B. 1956, University of Vermont
Smith, Donald David Md.
Smith, Donald James Mass.
Smith, Donald Lindsey Fla.
Smith, Donald Steele II N.H.
A.B. 1951, Dartmouth College
M.H.A. 1953, University of
Minnesota
Smith, Doris Elizabeth D.C.
B.S. 1952, D.C. Teachers College
Smith, Dorothy Md.
Smith, Earl Clarence, Jr. Md.
A.B. in Govt. 1957, The George
Washington University
Smith, Eben Elliot, Jr. Fla.
A.B. 1950, Brown University
Smith, Edmund Gambrill Del.
Smith, Eleanor Sue D.C.
B.S. 1942, Mississippi State College
Smith, Eleanor Theresa Md.
B.S. 1947, New Jersey State
Teachers College
Smith, Elise Whitney N.Y.
Smith, Elizabeth Wright Md.
Ph.B. 1923, University of Chicago
Smith, Emilie North S.C.
B.S. 1953, Limestone College
Smith, Faith Rawdon D.C.
Smith, Frances Clyde D.C.
Smith, Frank White Md.
A.B. 1957, The George Washington
University
Smith, Frederic Newcomb Ind.
Smith, Frederick Wilson, Jr. Va.
Smith, Gladys Holmes Md.
B.S. 1948, D.C. Teachers College
A.M. in Ed. 1957, The George
Washington University
Smith, Gowans Md.
A.B. 1927, Princeton University
Smith, Harold James D.C.
A.B. 1952, De Pauw University
Smith, Helen Flood Cuba
Smith, Helen Othello D.C.
B.S. 1950, D.C. Teachers College
Smith, Inez Marie D.C.
A.B. 1950, Davis and Elkins College
Smith, Jack Wyman Md.
B.S. 1948, The George Washington
University
Smith, Jackson Lynn Fla.
A.B. 1954, University of Florida
Smith, James Alfred Va.
B.S. 1953, Bucknell University
Smith, James Egbert Md.
Smith, James Lawrence Ohio
B.S. 1946, Alabama State College
LL.B. 1948, Western Reserve
University
Smith, Jane Carol Md.
Smith, Janet Merle Md.
B.S. 1949, University of Rhode
Island

Smith, Jean Rowe Md.
A.B. 1954, University of Maryland
Smith, Jennings Talbot D.C.
A.B. 1950, LL.B. 1953, The George Washington University
Smith, Jesse Robinson, Jr. D.C.
Smith, John Gordon N.Y.
B.S. 1955, Columbia University
Smith, John Joseph D.C.
A.B. 1955, Seton Hall University
Smith, John Marquis D.C.
B.S. 1941, Kent State Teachers College
Smith, Joy Eloise D.C.
A.B. 1953, Wheaton College
Smith, Joyce Arlene Md.
Smith, Katharine Virginia Rice D.C.
Smith, Kathryn Anne Va.
Smith, Kirk Brannon Va.
Smith, Lee Lewis Md.
B.S. 1952, Maryland State Teachers College, Towson
Smith, Leland Wrightman Va.
A.B. in Govt. 1956, The George Washington University
Smith, Lillian Piggott Va.
Smith, Marjorie Edith Va.
Smith, Mary Frances D.C.
B.S. 1946, East Carolina College
Smith, Mary Helen Md.
Smith, Maye Sephus D.C.
Smith, Michel Frans Va.
A.B. 1947, A.M. 1953, University of Texas
Smith, Noel Irving Iowa
B.S. 1952, Iowa State College
Smith, Patricia May Va.
Smith, Patricia Ruth Va.
Smith, Philip Cox Md.
Smith, Phyllis M. Va.
Smith, Rachel A. D.C.
Smith, Ralph Lindley Va.
B.S. 1957, University of Maryland
Smith, Richard D.C.
Smith, Richard Darwin Pa.
B.S. in E.E. 1957, University of Pittsburgh
Smith, Robert Clyde, Jr. Va.
B.S. 1950, Randolph-Macon College
Smith, Robert Dennis Va.
Smith, Robert Stuart Md.
Smith, Robert Syme Fla.
A.B. 1956, Princeton University
Smith, Roger Bartol D.C.
Smith, Ronald Elsworth D.C.
Smith, Roy Lindsay, Jr. Md.
A.B. in Govt. 1948, The George Washington University
Smith, Ruth Davidson Va.
Smith, Sally Hunt Va.
Smith, Stanley Sherrel D.C.
Smith, Thomas Edgar Calif
Smith, Thomas Eland D.C.
Smith, Thomas Elijah D.C.
B.S. 1953, Benedict College
Smith, Timothy Edward Md.
A.B. 1927, Swarthmore College
A.M. 1935, New Jersey State Teachers College, Montclair
Smith, Verla Lee Md.
Smith, Walter Joseph Va.
B.S. 1952, Virginia Polytechnic Institute
Smith, Warren D.C.
A.B. 1953, University of Vermont
Smith, Warren Webster D.C.
A.B. 1951, The George Washington University
Smith, Warrington Gilmore D.C.
B.S. 1949, M.B.A. 1950, University of Maryland
Smith, William Andrew III Md.
B.M.E. 1950, Catholic University of America
Smith, William Ewart, Jr. Md.
A.B. 1950, A.M. 1951, Syracuse University
Smith, William Murray Mich.
A.B. 1954, University of Michigan
Smith, William Parkhurst, Jr. Md.
A.B. in Govt. 1953, The George Washington University
Smith, William Patrick D.C.
Smith, William Ruthven III Va.
B.S. 1956, Trinity College
Smithers, Ann Sappington Md.
B.S. 1956, University of Maryland
Smithson, Clyde Elmer Md.
Smolinski, Joseph Peter, Jr. N.Y.
Smuck, Elsa Margaret D.C.
A.B. 1957, Wittenberg College
Smythe, Ethel Huffman Va.
A.B. 1941, Randolph-Macon Woman's College
Smythe, Jane Estelle Pa.
Smythe, William Edward Pa.
Snaith, Russell Va.
Snakenberg, Forrest LeRoy D.C.
Snapp, Ralph Boone Md.
B.S. in M.E. 1948, Carnegie Institute of Technology
Snavely, Carl Miller, Jr. Va.
Snead, James Marcus D.C.
Snead, Marshall Roosevelt D.C.
Snearline, Paul Albert Md.
A.B. 1937, University of Akron
A.M. 1938, University of Michigan
Snedeker, Patricia Ann D.C.
A.B. 1954, Dunbarton College of the Holy Cross
Sneed, Robert Duncan Va.
Sneeringer, Ann Marie Pa.
Snell, George Francis Conn.
Sniado, John Luis Mass.
B.S. in Ch.E. 1954, University of Massachusetts
Snider, Edwin Wallace Va.
A.B. 1947, Princeton University
Snider, Eldon Earl Md.
Sniegocki, James Edward Pa.
Snight, James Edward D.C.
Snodey, Lenore Ilene Yoder D.C.
Snodgrass, Lydia Belle Va.
Snook, William Henry Va.
B.S. in Phar. 1952, State University of Iowa
Snow, Bertha Mass.
A.B. 1908, A.M. 1916, Radcliffe College
Snowhite, Shelia D.C.
Snyder, Albert Harry Pa.
Snyder, Arnold Lee, Jr. Va.
Snyder, Clifford Lee D.C.
B.S. 1953, North Georgia College
Snyder, Dennis Truman Md.
A.B. 1957, University of Maryland

Snyder, Eugene Earl	N.Y.
Snyder George Roderick A.B. 1954, Pennsylvania State University	Pa.
Snyder, Harriet Loree	Md.
Snyder, Margaret Burt	D.C.
Snyder, Royce Wade, Jr. A.B. 1954, Dickinson College	Va.
Snyder, Thomas Guy	Pa.
Snyder, Velsie Hill	D.C.
Sobeck, Bernard George	D.C.
Sobhani, Hossein Chaharbashi B.S. 1957, University of Oklahoma	Iran
Sobotka, Alice Ward	Va.
Soedaliman, A.	D.C.
Soedjiman	Indonesia
Sokolowsky, William A.B. 1951, The George Washington University	N.Y.
Solack, George Andrew	Pa.
Solakian, Henrietta June	Md.
Solback, Crandal Wilson B.S. 1955, Georgetown University	D.C.
Solomon, Alvin Lee B.S. in P.E. 1955, The George Washington University	D.C.
Solomon, Anita Louise	Md.
Solomon, Barbara Ann A.B. 1953, A.M. 1954, University of California	Calif.
Solomon, Charles Silverton A.B. 1952, New Mexico Highlands University	Alaska
Solomon, Mary Sadie	D.C.
Solomon, Nathaniel Fred	Md.
Solomonides, Joyce	D.C.
Solt, Daniel Edmund	Va.
Solter, Myron Woodrum A.B. in Govt. 1950, The George Washington University	D.C.
Somer, Emanuel Philip B.B.A. 1957, College of the City of New York	N.Y.
Somers, Miriam	D.C.
Somervell, James Alexander	D.C.
Somerville, Harrison, Jr. B.S. 1955, Washington and Lee University	D.C.
Sommaripa, Amory Matislav A.B. 1952, Harvard University A.M. 1954, Georgetown University	Va.
Sommer, John Gustav, Jr.	D.C.
Sommer, Michael Sandor	D.C.
Sommer, Wayne Carlton B.S. in Ed. 1930, Miami University	Md.
Sommer, William Frederick, Jr. B.S. in M.E. 1950, Purdue University	Va.
Sommerkamp, Charles Humbird, B.S. 1957, University of Maryland	Md.
Sommers, John Wilbur	Wash.
Sonen, Jean Peacock	Va.
Sonne, Clarence Melvin, Jr. B.S. 1943, A.M. 1947, University of Pennsylvania M.P.A. 1957, Harvard University	Pa.
ood, James Howard B.S. 1954, College of William and Mary B.S. in Eng. 1954, University of Illinois	Pa.
ordyl, Frank Vincent	Md.
oria, Paul Lawrence	Va.
orin, Jeanette Molly	D.C.
Sorkin, Sally Eileen	Md.
Soroko, Stanley Robert	Md.
Sorrell, Frederick Maurice	Va.
Sotak, John Bernard B.S. in E.E. 1957, University of Pittsburgh	Pa.
Soter, Edward Joseph A.B. 1955, University of Maryland	Md.
Soto, Eugene Alfonso	Colo.
Soucek, Frank James B.E.E. 1948, LL.B. 1953, The George Washington University	Va.
Soudriette, Jack Douglas	Mich.
Soukup, Janice Lucille	N.D.
Soukup, Merlyn Michael	Md.
Soulen, Richard Lawrence	Pa.
Souther, Richard Stirling A.B. in Govt. 1957, The George Washington University	Va.
Sovern, Maurice Alan B.S. 1951, Purdue University	N.Y.
Sowers, Elizabeth M.	Va.
Spadetti, Barbara Joan	Va.
Spaeth, Earl Chester A.B. 1942, Oberlin College Ph.D. 1946, University of California at Los Angeles	Conn.
Spaid, Giles Henry	Md.
Spalding, Warren Dell B.B.A. 1954, West Texas State College	Texas
Spangler, Peter Kiefer	Md.
Spangler, Wayne Eller A.B. 1953, Bridgewater College	Va.
Spann, Janice Funk	Md.
Spargnapani, Paulo Adolfo	D.C.
Sparks, Kenneth Wayne A.B. 1952, University of Chicago M.B.A. 1957, Harvard University	Ill.
Spates, James Edward B.S. in M.E. 1949, Purdue University	Md.
Spaulding, Harold Dale	Pa.
Spear, Harry Lee	Va.
Spearbeck, Edward Dever	Va.
Spearing, Cecilia Watkins A.B. 1947, Hunter College A.M. 1949, Columbia University	N.Y.
Specht, Betty Eugenia A.B. 1948, University of Georgia	Ga.
Specht, Robert Marvin	Wash.
Spector, Herman B.S. 1939, U. S. Naval Academy	D.C.
Spehr, Paul Christopher A.B. 1952, Kenyon College	Ohio
Speidell, Edmund Allan A.B. 1955, Williams College	N.J.
Speight, Ronald J.	N.J.
Spelts, Marjorie Lucile	Nebr.
Speltz, Paul Henry A.B. 1939, St. Mary's College, Minn.	Va.
Spence, Harrison Michael A.B. 1957, University of Idaho	Idaho
Spence, Julius Arthur	Va.
Spencer, Claron Chipman A.B. 1954, The George Washington University	Utah
Spencer, Iris Alexander	D.C.
Spencer, Jack Taif B.S. 1935, Kent State University M.S. 1936, University of Wisconsin Ph.D. 1939, Ohio State University	D.C.
Spencer, John Richard B.S. 1949, University of Illinois	Va.
Spencer, John Stewart	Va.

Spencer, Margaret	D.C.
Spencer, Marjorie Ann	Va.
Spencer, Ralph Edwin B.S. in C.E. 1953, Howard University	D.C.
Spencer, Raymond Law A.B. 1953, The George Washington University	Va.
Spencer, Richard Paul A.B. 1951, Dartmouth College M.D. 1954, University of Southern California	Md.
Spencer, Thomas Klauder B.S. 1940, U. S. Military Academy	Va.
Spengler, Charles Joseph B.S. 1953, Brooklyn College	N.Y.
Sperling, Joseph Bear A.B. 1957, College of the City of New York	N.Y.
Sperling, Samuel A.B. 1936, M.S. in Ed. 1939, College of the City of New York	Md.
Spevak, Michael Bart	Md.
Spiegel, Herbert Eli B.S. 1956, Brooklyn College	N.Y.
Spiegelberg, Ruth May B.S. in Ed. 1956, D.C. Teachers College	D.C.
Spiegler, David	D.C.
Spiegler, Paul Eppley B.S. 1956, University of Maryland	D.C.
Spies, Mark Franklin	Va.
Spigel, Lillian Goldie	D.C.
Spikes, John Jefferson A.B. 1951, Union College	Md.
Spitalney, Ronald	D.C.
Spithas, Aphrodite Nicholas	D.C.
Spithas, Constantine Nicholas	D.C.
Spithas, E. Nicholas	D.C.
Spitler, Nellie Carr Anderson A.B. 1943, The George Washington University	D.C.
Spittle, Janet Carol	Va.
Spitzack, Viola H.	D.C.
Spitzer, Joseph William	N.Y.
Spitzer, Lillemor Elena B.S. 1955, The George Washington University	D.C.
Spitzer, Roger Earl	D.C.
Spivak, Sandra Lee	D.C.
Splane, Mildred Rich	Va.
Splawinski, Edward Walter B.S. in B.A. 1954, M.B.A. 1955, University of Denver	Pa.
Spong, Henry Douglas A.B. 1949, Emory University	N.C.
Spradlin, Thomas Richard	Okla.
Sprague, Dean A.B. 1943, Amherst College A.M. 1950, Syracuse University	Md.
Sprague, Irvine Henry A.B. 1948, College of the Pacific	Calif.
Springer, David Breckenridge B.S. 1951, Iowa State College M.S. 1956, State University of Iowa	Va.
Springer, Delmar George	Va.
Springer, Jacqueline Sarah	Mass.
Springer, Richard LeRoy A.B. 1952, University of Toledo	Ohio
Sprogeris, Voldemars	D.C.
Sproull, Jerry Lynn B.S. in Ch.E. 1952, Grove City College	Pa.
Spyropoulos, Chris E.	D.C.
Stack, Alonzo Lee, Jr. LL.B. 1951, Southern Methodist University	Va.
Stadermann, Albert Ormand	D.C.
Stafford, Dorothy Craig	D.C.
Stafford, Marie Harte A.B. 1942, Georgian Court College	D.C.
Stafford, Paul Gordon A.B. 1956, University of Maryland	N.J.
Stafford, Tony Jason A.B. 1957, Wake Forest College	N.C.
Stafford, William Stephen	D.C.
Staful, Erma Jean	Md.
Stageman, Anne	Iowa
Stagner, Sylvia Ardella A.B. 1932, University of Washington	Md.
Stahl, Robert Frederick B.S. 1954, Washington College	Pa.
Stahl, Robert Sheridan	D.C.
Stahr, William Earl A.B. 1951, A.M. 1953, University of Maryland	Md.
Stakem, Eugene Paul	D.C.
Stakem, John P.	D.C.
Stalesen, Bjorn	Va.
Staley, Henry Pearson, Jr.	D.C.
Staley, Samuel Sorber III A.B. 1952, Principia College	Va.
Stalnaker, Robert Gordon	Fla.
Stamps, Betty Jean	Va.
Stancil, Willie Mae Gable B.S. 1949, D.C. Teachers College A.M. 1956, New York University	D.C.
Stancill, James McNeill, Jr. A.B. in Govt. 1954, M.B.A. 1957, The George Washington University	Va.
Stander, Maxwell B.S. 1942, College of the City of New York	Md.
Stanford, G. Alonzo A.B. 1939, Albion College A.M. 1941, State University of Iowa	Md.
Stanghagen, William Harold B.S. in C.E. 1952, University of Southern California	Va.
Stankavitch, Anne Marie B.S. 1953, A.M. 1956, New York University	Md.
Stanley, Charles Trowbridge	D.C.
Stanley, Harvey	D.C.
Stanley, Margaret L. Scipio	D.C.
Stanley, Rowena Marietta	D.C.
Stanner, Patricia Wilson	Va.
Stansberry, Chadwick Leroy	Va.
Stansberry, Richard Donald A.B. 1950, Oklahoma City University	D.C.
Stant, Margaret Adams B.S. 1952, Ed.M. 1955, University of Maryland	Md.
Stanton, Patricia Joan	Va.
Stanton, Thelma Pruden A.B. 1929, University of Richmond	Va.
Stanton, William Edward, Jr.	Va.
Staples, Stanley Foster	Va.
Stapor, Bernard Conrad B.S. 1950, Yale University	Va.
Stark, LeRoy Leonard B.S. 1937, University of Pittsburgh	Va.
Stark, Newton Taylor B.S. 1941, A.M. 1948, University of Detroit	D.C.
Stark, Wilma Ruth B.S. 1940, Michigan State College	D.C.

Starkey, Joseph Forrest B.F.S. 1949, University of Southern California	Wash.
Starr, Barbara Kent A.B. 1954, Wilson College	Ohio
Starr, John Erwin	Ariz.
Starr, Myron Maffin	Va.
Starr, Selig A.B. 1940, Brooklyn College A.M. 1951, The George Washington University	Md.
Stater, Catherine Jeanne	Md.
Stathis, Barbara Klotz B.S. 1947, D.C. Teachers College	Md.
Stathopoulos, George Nicholas A.B. 1957, University of Michigan	Mich.
Statland, Edward Morris A.B. in Govt. 1954, The George Washington University	D.C.
Staub, Philip Victor	Pa.
Staudt, James Everette B.S. in M.E. 1957, North Dakota Agricultural College	N.D.
Stauffer, Donald Barlow A.B. 1952, Wesleyan University A.M. 1956, Indiana University	D.C.
Stauffer, Robert Fred A.B. 1951, University of Wyoming	Wis.
Stauss, Virginia Louise A.B. 1957, College of Wooster	Va.
Staves, Marion Cole B.S. 1952, American University M.S. 1954, Georgetown University	D.C.
Stavrakas, Demetrios Spyros	D.C.
Steadman, Frank M., Jr.	Md.
Steadman, John Richard	Va.
Stearman, Joel A.B. 1950, New York University	Md.
Stearman, Mandell Don	D.C.
Stearns, Leonard William B.S. 1953, Ohio State University	Md.
Steck, Dorothy	D.C.
Stedman, William Perry, Jr. A.B. 1943, University of Maryland A.M. 1947, School of Advanced International Studies	Md.
Steele, Catherine Sweat	Va.
Steele, Colin Gansent B.S. in Ed. 1956, University of Virginia	Va.
Steen, Junius Crawford	D.C.
Steep, Carlton Francis	D.C.
Stefanye, David A.B. 1948, A.M. 1949, Columbia University	Md.
Steffens, L. Beth	Md.
Steger, Kenneth Meritt A.B. 1955, Michigan State University	Va.
Stegman, Richard Leon	Va.
Stegmeier, Erich John A.B. 1955, M.S. 1957, Queens College	N.Y.
Steigner, Mary Alice A.B. 1952, Goucher College	Md.
Stein, Ann Beth	Va.
Stein, Charles Alan B.S. 1954, Duke University B.Ch.E. 1956, University of Florida	Md.
Stein, Elizabeth A.B. in Ed. 1931, The George Washington University A.M. 1950, Columbia University	D.C.
Stein, Ira David B.S. 1956, Rutgers University	N.J.
Stein, Murray Robert B.S. 1953, D.C. Teachers College	D.C.
Stein, Selma	D.C.
Steinberg, Harold Lewis A.B. 1956, Brooklyn College	N.Y.
Steinberg, Harry B.S. in M.E. 1936, New York University	D.C.
Steinberg, Harvey Bert A.B. 1955, The George Washington University	Md.
Steinberg, J. David	Md.
Steinberg, Susan Barbara	N.J.
Steiner, Carl	D.C.
Steiner, Patricia Mary	Canal Zone
Steinkuehler, Louis Frederick	D.C.
Steinman, David Perry	D.C.
Steinman, Robert Henry	D.C.
Steinmetz, James Hershey A.B. 1956, Trinity College	Va.
Steinmetz, Richard Carlton, Jr. B.S. in M.E. 1957, Purdue University	Ill.
Stell, Jack Powell B.E.E. 1955, The George Washington University	Md.
Stelmak, Margaret	N.Y.
Stelmak, Mary	N.Y.
Stemler, Walter Conrad B.S. 1950, University of Illinois	Md.
Stemme, Robert Bolton A.B. 1952, Sacramento State College	Colo.
Stemple, Jerry Leon	Ohio
Stempler, Gerald Leon B.S. 1953, University of Maryland	Md.
Stennett, Edwin Anthony	D.C.
Stephanadis, Steve Demetrios	D.C.
Stephanos, John	D.C.
Stephens, Robert Raymond B.S. in E.E. 1948, Iowa State College	Md.
Stephens, Virginia Bush A.B. 1906 University of Utah	D.C.
Stephens Winston Bryant B.S. in C.E. 1947, Duke University	Md.
Stephenson, Clarence Billy B.S. 1944, U. S. Naval Academy	Md.
Stephenson, Elizabeth Weiss B.S. 1947, University of Chicago	Md.
Sterling, Charles Albert	Md.
Sterling Connie Claire	D.C.
Sterling, Doris Jean A.B. 1955, Mary Washington College	Va.
Sterling, George William	Md.
Sterling, Maeve Frederica A.B. 1956, The George Washington University	D.C.
Sterling, William Robert B.S. 1953, Philadelphia College of Pharmacy M.S. 1954, Ohio State University	Pa.
Sterman, Betsy Hodges A.B. 1953, Agnes Scott College A.M. 1956, The George Washington University	Va.
Stern, Edith Ann	D.C.
Stern, Estelle A.B. in Govt. 1953, The George Washington University	Fla.
Stern, Howard Lyle	D.C.
Stern, Jere Bart B.S. 1954, The George Washington University	D.C.

Stern, Joanne Fla.
Stern, Sidney Robert Mass.
A.B. 1955, Harvard University
Sternfels, Paul Robert N.Y.
Stetten, Kenneth Jay Pa.
B.S. 1952, Lehigh University
A.M. 1957, Boston University
Stevens, Barbara Kirsten D.C.
Stevens, Dorothy Chedaker D.C.
Stevens, Howard M. Va.
Mus.B. 1940, Oberlin College
Stevens, James Richard D.C.
Stevens, Lucille Lawson D.C.
B.S. 1953, D.C. Teachers College
Stevens, Mary Peal N.Y.
B.S. 1939, Hampton Institute
Stevens, Richard Class Va.
Stevens, Richard S. Va.
A.B. 1950, Brown University
Stevenson, Daniel, Jr. D.C.
Stevenson, Eugene Octave Sykes D.C.
B.S. 1955, The George Washington University
Stevenson, Gertrude Brothers D.C.
Stevenson, Harold Furst Pa.
B.S. 1952, Georgetown University
Stevenson, Ruby Moore D.C.
B.S. in Ed. 1957, University of Michigan
Stewart, Anne English Va.
Stewart, Arthur Gilbert Maine
B.S. 1937, D.C. Teachers College
A.B. in Ed. 1956, The George Washington University
Stewart, Barbara Hinton Va.
Stewart, Dale Duane Calif.
A.B. 1956, Johns Hopkins University
Stewart, Dale Woodard Va.
Stewart, David Charles D.C.
A.B. 1949, M.F.A. 1954, Western Reserve University
A.M. 1950, Columbia University
Stewart, Donald Edward James Va.
A.B. 1955, Washington and Lee University
Stewart, F. Delano D.C.
Stewart, Gladys Carroll Va.
A.B. 1939, University of Chattanooga
A.M. 1941, University of Cincinnati
Stewart, Glenn Morgan, Jr. Va.
B.S. 1943, U. S. Naval Academy
Stewart, Jack Atwell Fla.
Stewart, Janice Siglar Va.
Stewart, Jo Ann D.C.
Stewart, Mary Fla.
Stewart, Milton Ellis Md.
A.B. 1940, University of Virginia
Stewart, Morris Bennett Va.
Stewart, Noble Ellsworth Va.
Stewart, Paul Kennedy Md.
Stewart Pearl Blanck Md.
Stewart, Roy Henry Calif.
Stewart, William James Md.
Stiburek, Beverly Joan Idaho
B.S. 1955, Brigham Young University
Stichman, Eugene P. D.C.
Stickney, Paul Herbert D.C.
Stickney, William Wallace III Va.
Stiewig, Nathan William Va.
B.S. 1940, University of Oregon
Still, Barbara Rita N.C.
A.B. 1956, University of North Carolina
Still, Virginia Key D.C.

Stille, Charles Aubrey D.C.
B.S. in I.E. 1951, Virginia Polytechnic Institute
Stimson, William Raymond Mich.
A.B. 1957, St. Mary's College
Stine, Edward Vaughan Md.
Stinson, Edmund Charles Va.
Stirewalt, Edward Neale Va.
A.B. 1938, High Point College
A.M. 1942, University of North Carolina
Stirling, Charles Egbert D.C.
Stirling, Elizabeth Laura D.C.
Stitleman, Leonard Arnold Md.
A.B. 1953, Brooklyn College
Stites, Richard Thomas D.C.
A.B. 1956, University of Pennsylvania
Stix, Thomas George D.C.
Stober, Alfred Karl Va.
Stochl, Thomas James D.C.
A.B. 1955, The George Washington University
Stockton, Bernard Cornelius Md.
B.S. 1957, Maryland State Teachers College, Salisbury
Stockton, Charles Delaney D.C.
Stoddard, Sheila D.C.
Stodola, Alice Marie D.C.
Stoess, Karl Heinz Rudolf Md.
LL.B. 1950, University of Erlangen, Germany
M.C.L. (Am. Pr.) 1953, The George Washington University
Stoffel, Wolmar John D.C.
B.S. 1957, University of Wisconsin
Stogsdill, Marion Russell Va.
Stokes, James Daniel, Jr. Va.
B.S. in E.E. 1953, Tulane University
Stokes, Richard Arthur Md.
A.B. 1953, St. Michael's College
Stokes, Turner Van Cortlandt Md.
Stolle, Lee Roy Allen Va.
Stone, Alexander, Glattstein Md.
Doctor of Laws 1940, Tisza István University, Hungary
Stone, Gregory King Va.
Stone, John Garnet III D.C.
Stone, Samuel Beckner Va.
B.S in E.E. 1955, Virginia Polytechnic Institute
Stone, Steven Faraday Va.
B.Ch.E. 1957, Rensselaer Polytechnic Institute
Stoner, Elizabeth Ann Va.
Stoppleworth, Leland John D.C.
Stores, Charles Dinwiddie, Jr. Va.
Stores, Linda Kerr Va.
Storey, Kate Douglass D.C.
Storm, Robert Arnold Va.
Story, Carol Ann N.Y.
Story, Horace Edwin Md.
A.B. 1952, The George Washington University
Stotler, Ruth Yost Md.
B.S. 1937, West Virginia University
A.M. 1955, University of Maryland
Stout, Carol E. Va.
Stoutenburgh, John Birch Va.
Stovall, William Robert Jr. D.C.
Strabley, Suzanne T. Va.
Strand, Carolyn Margaret D.C.
A.B. 1956, University of Denver

Strand, Harald Warren A.B. 1949, St. Olaf College A.M. 1950, University of Wisconsin	Minn.
Strand, Henry Joseph A.B. 1954, North Central College A.M. 1958, University of Chicago	D.C.
Stranov, Boris Eugene	D.C.
Strassberg, Robert	N.Y.
Stratton, Thomas Joseph A.B. in Govt. 1956, The George Washington University	Md.
Straub, Henrik Herman	D.C.
Straubinger, George Taylor	Md.
Strauss, Alice Hanover	N.Y.
Strauss, Armar Archbold B.S. 1951, Yale University M.S. 1953, University of Rhode Island Ph.D. 1956, University of Illinois	D.C.
Strawser, Elaine Frances A.B. 1953, Mary Washington College	Va.
Strawser, Neil Edward A.B. 1951, Oberlin College	Md.
Strawser, Robert Howard	Va.
Strayer, Earl Waldo	Va.
Stream, Richard Lockey	Ind.
Street, Norman Harold	D.C.
Strehlow, Louis Harold B.E. 1935, Wisconsin State Teachers College, Milwaukee	Wis.
Stressenger, Peter Brooks	Va.
Strickland, James Albert B.S.E. 1946, U. S. Naval Academy	Mass.
Strickland, John Earl	Md.
Strickland, Lawrence Gordon A.B. 1947, The George Washington University	D.C.
Strieby, LaRue Thomson	Md.
Stringer, Aubrey Jackson	Va.
Stringfield, Barbara Louise A.B. 1952, American University	D.C.
Stroebel, William A.B. 1952, Minnesota State Teachers College, Mankato A.M. 1957, University of Chicago	Minn.
Stroh, Alfred, Jr. B.S. in C.E. 1947, University of Nebraska	Nebr.
Stromick, Charles	Md.
Strong, Lavon B. A.B. 1951, Millsaps College	Miss.
Strong, Myron Emerson	D.C.
Strother, Paula Barbour B.S. 1952, D.C. Teachers College	D.C.
Strothers, Harlan A. B.S. in E.E. 1940, University of Southern California	Va.
Stroud, Vincent Dennis	Md.
Strub, Frederic Richard	Va.
Strub, Norbert George, Jr.	Va.
Struder, Raymond Marshall	Va.
Struglia, Lena Annette B.S. 1945, Cornell University A.M. 1950, Indiana University	N.Y.
Stuart, Roger Winship II	Md.
Stuart, William	Oreg.
Stuart, William Taft	Md.
Stubbs, Peggy Ann	Va.
Stuckey, Robert Earl	Md.
Stull, Elizabeth Brooks	Pa.
Stull, Neil Francis	Va.
Stultz, Irving Washburn B.S. 1930, Tufts University B.S. 1935, M.P.A. 1955, Harvard University	N.H.
Stumpf, Harry Paul A.B. 1954, University of Colorado	Kans.
Sturm, Bob Lee A.B. 1956, The George Washington University	Okla.
Sturm, Herman Mack A.B. 1938, Brooklyn College A.M. 1949, American University	N.Y.
Stutz, Frank August B.S. 1931, Lehigh University A.M. 1940, The George Washington University	D.C.
Stuve, Donald Hans	Wis.
Styer, Joanne Louise B.S. 1954, Stout State College	Md.
Styers, Nasha Kochinsky	Pa.
Su, Kelvin A.B. 1953, Union College	Hong Kong
Suarez, Libia E.	D.C.
Suchecki, George, Jr.	Mich.
Sudduth, David Benoni	D.C.
Suer, Clifford Eugene B.S. in M.E. 1948, University of Colorado	Md.
Suescum, Alfredo Timateo	Panama
Suescum, Rafael Antonio	Panama
Sugar, Diane Leslie	D.C.
Sugarman, Elsa Jean	D.C.
Sugarman, Gerald Ivan B.S. 1957, The George Washington University	D.C.
Sughrue, Judith Ann A.B. 1957, Regis College	Mass.
Suglia, Thomas Anthony	Md.
Suit, Herman Day A.B. 1948, University of Houston M.D. 1952, Baylor University	Md.
Suit, Rose Marie	D.C.
Suitor, Earl Carlyle, Jr. B.S. 1952, University of Massachusetts	Md.
Sujono, Djono	Indonesia
Sukose, Olga	N.J.
Sullins, Roberson Eugene B.S. 1957, Central Missouri State College	Md.
Sullivan, Dorothy M. A.B. 1957, University of Florida	Fla.
Sullivan, Edward Francis B.S. in C.E. 1952, University of Notre Dame	Md.
Sullivan, Eleanore Catherine A.B. 1925, Boston University A.M. 1931, Radcliffe College	D.C.
Sullivan, Frances Xavier	D.C.
Sullivan Gregory Michael	Va.
Sullivan, James Francis, Jr. B.S. 1956, University of Maryland	Pa.
Sullivan, Jerry Daniel B.S. 1955, Duquesne University	Pa.
Sullivan, Johnny Gordon B.S. 1951, Florida State University	Md.
Sullivan, Joseph James	D.C.
Sullivan, Lawrence	Md.
Sullivan, Loretta Burnette A.B. 1953, Mary Washington College	Va.
Sullivan, Martin Eugene	Iowa
Sullivan, Mary Elizabeth	Mass.
Sullivan, Maureen Therese	Ill.
Sullivan, Mary Jane B.S. 1954, West Virginia University	W.Va.
Sullivan, Raymond Jeremiah	D.C.
Sullivan, Robert Carlton	Texas

Sullivan, Robert Claude A.B. 1954, Williams College	Md.
Sullivan Robert Cook B.S. 1955, Brown University	R.I.
Suminski, Harold	Md.
Summitt, Wilma Dee A.B. 1950, University of Oklahoma	Mo.
Sumner, Neal Ray, Jr.	Md.
Super, Olga Marie	Va.
Sur, William Kenneth B.S. 1954, Villanova University	Ohio
Surber, Lou Clinebell B.S. in Ed. 1951, A.M. in Ed. 1952, West Virginia University	D.C.
Surman, Richard Benjamin	Md.
Surmick, George A.	D.C.
Suro Pico, Alfonso B.S. 1932, University of Puerto Rico	D.C.
Surowiec, Matilda	Pa.
Suprenant, Charles Joseph	Md.
Surrey, Edith Shores A.B. 1933, Hunter College A.M. 1934, Columbia University	Md.
Susaorach, Uraivun M.D. 1954, University of Thammasat, Thailand	Thailand
Suse, Barbara Jane	D.C.
Sussman, Sorol Lee B.S. 1957, Ohio State University	D.C.
Suter, James Thomas	Va.
Sutherland, Edward Thomas	Md.
Sutherland, Malcolm Livingston B.S. 1957, Carnegie Institute of Technology	Miss.
Sutherland, Richard Clifton II B.S. 1955, Virginia Military Institute	Va.
Sutker, Marshall Wayne B.S. in Ch.E. 1954, University of Illinois	Pa.
Sutton, Barbara Louise A.B. 1953, Brown University	Pa.
Sutton, Elvin Dean B.S. in E.E. 1957, University of Kentucky	Md.
Sutton, Irene Hill A.B. 1949, Shepherd State College A.M. in Ed. 1954, The George Washington University	W.Va.
Sutton, Robert Gerald	Pa.
Sutton, Sterling Scott A.B. 1952, A.M. 1956, University of Florida	D.C.
Sutton, William Joseph, Jr. A.B. in Govt. 1957, The George Washington University	Pa.
Sutz, Richard Kenneth B.S. 1954, Illinois Institute of Technology	Ill.
Suwanasthien, Bhasna	Thailand
Suzuki, Ko Flory A.B. 1956, The George Washington University	Japan
Suzuki, Setsuko A.B. 1956, Meiji Gaquin,Tokyo	Japan
Swain, G. Jacqueline	Va.
Swain, Teresa Meloy B.S. 1956, Virginia State College	Va.
Swankin, David Arnold A.B. 1954, Brandeis University M.S. 1957, University of Wisconsin	Md.
Swanson, Carole Jean A.B. 1957, Gustavus Adolphus College	D.C.
Swanson, Norman Izzaid	Va.
Swanson, Warren	Conn.
Swartley, John Naylor	Pa.
Sweadner, Sandra Jean	Md.
Swearingen, Janet Ruth	D.C.
Swearingen, Lynn Leroy A.B. 1931, Sioux Falls College A.M. in Ed. 1933, State University of Iowa A.M. in Ed. 1953, The George Washington University	Md.
Sweedler, Michael Jon B.E. 1957, Yale University	N.Y.
Sweeney, Charles John, Jr. B.S. 1956, St. Joseph's College	Md.
Sweet, Bradley A.	D.C.
Sweet, Mary Heath	Va.
Swenson, Philip Michael	Va.
Swetnam, Joan Caroline A.B. 1957, Salve Regina College	Mo.
Swick, Allen Ambrose A.B. 1952, Shepherd State College	Md.
Swicord, Donald Augustus, Jr.	Fla.
Swift, Joseph Michael	D.C.
Swiger, Elizabeth Ann	D.C.
Swiggaard, Edward Morris B.S. 1953, The George Washington University	Va.
Swire, Esther A.B. 1931, A.M. 1932, Cornell University	Va.
Switzer, Harry Raper	Md.
Swope, Paul Girard	Md.
Swope, Ross Hain	Pa.
Swortzell, Lowell A.B. 1952, A.M. 1954, The George Washington University	D.C.
Swyter, William Mecken A.B. 1948, A.M. 1951, Bob Jones University	Md.
Sykes, Gaile Annabelle	Va.
Sykes, Grant Russell B.B.A. 1950, Tulane University A.M. in Govt. 1953, The George Washington University	D.C.
Sykes, Mary Ann	D.C.
Sylvester, Anne Ryall	D.C.
Sylvester, Donald Hester B.S. 1932, Murray State College	Md.
Sylvester, Rita Davis A.B. 1930, Manhattanville College of the Sacred Heart	N.Y.
Sylvester, Robert Watson A.B. 1951, A.M. 1952, The George Washington University	Va.
Sylvester, Susan Heloise A.B. 1956, Cornell University	D.C.
Sylvester, Wendell Reginald A.B. 1951, Columbia University	Md.
Szcepanski, Charles Chester B.S. 1951, Canisius College	D.C.
Szgchet, Linda Joan	D.C.
Szmuriga, Stephen Francis, Jr.	N.J.
Szpilowski, Albin	D.C.
Szufnara, Helen	D.C.
Szwec, Anna Krawec	Va.
Szwec, Michael	Va.
Szwed, Clarence Francis B.S. 1952, M.S. 1954, The George Washington University	Pa.

Szymanowski, Norbert Harold	Md.
Szymanski, Peter Menceslaus	Wis.

T

Tachino, Tadami B.S. 1952, A.M. 1954, American University	Va.
Taff, John Matthew	Va.
Taffet, Matilda Perl	N.Y.
Tager, Joyce Loftus B.F.A. 1949, Yale University	Va.
Taggart, John Ladd	Md.
Taguba, Ralph Resposo	Philippines
Taillon, Esther Ernestine	D.C.
Taira, Calvin Satoru	D.C.
Taishoff, Albert Edward A.B. 1953, The George Washington University	Md.
Taittonen, Raimo Llolevi	Finland
Takao, Frank Tokio A.B. 1950, University of Hawaii	Hawaii
Talbert, Joan Evans	D.C.
Talbott, John Hudson	D.C.
Talcott, Marilyn Susan	D.C.
Talcott, Marion Gerald B.S in Ed. 1929, Nebraska State Teachers College	Md.
Talentino, William Graves	Md.
Taliaferro, Helen Elizabeth B.S. 1950, Morgan State College A.M. 1956, New York University	D.C.
Talmanis, Edite	Va.
Talpalar, Beverly Wasserman	Va.
Tamer, Joseph Jacob	Va.
Tancredi, Samuel Albert B.S. 1951, American University	Va.
Tanenbaum, Sarah Gertrude	D.C.
Tang, Mary Nan-Nien	Va.
Tang, Tze-Tung A.B. 1944, National Central University, China B.S. 1949, St. Mary's College, Minn. M.S. 1951, Ph.D. 1954, The George Washington University	China
Tangas, Paul	Va.
Tanner, Bernard Malan B.S. 1954, University of Utah	Utah
Tanner, Sam D., Jr. B.S. in Ed. 1946, University of Georgia	Ga.
Tanner, William Hutchins	Md.
Tanzi, Vito	D.C.
Tarasuk, Albert Paul	N.Y.
Tarko, Helen	Pa.
Tarleton, Allen Ray	Va.
Tarnawa, Taras Michael	Ohio
Tarnell, Jacqueline Jean	D.C.
Tarolli, Thomas Louis B.S. 1957, University of Pennsylvania	Va.
arpley, Ernestine Annette	D.C.
arr, Jack Kershaw	Fla.
arr, James Kershaw	Fla.
ate, Constance Pegram B.S. 1945, D.C. Teachers College	D.C.
ate, Harry Randolph A.B. 1957, University of Virginia	N.J.
ate, Robert Lynn	N.C.
tom, Mary Helen A.B. 1947, The George Washington University A.M. 1949, Ph.D. 1951, Catholic University	Ark.
Tattersall, James Joseph B.S. 1941, Hyannis State Teachers College M.S. 1951, University of Massachusetts	Va.
Taubenblatt, Selig A. A.B. 1950, Brooklyn College A.M. 1951, University of Michigan	Va.
Taubeneck, Theodore Dooley A.B. 1948, Princeton University LL.B. 1951, Harvard University	Va.
Taulelle, Charles Randall Joseph	D.C.
Tavey, Patricia Rees	Va.
Tawney, Harrison Elliott B.S. in Ed. 1938, Ohio University Ed.M. 1952, Kent State University	Md.
Taylor, Barton W. A.B. 1942, University of Illinois	Ill.
Taylor, Byron Edward Richard	D.C.
Taylor, Charles Edward A.B. 1957, University of Maryland	N.J.
Taylor, Charles Harold B.E.E. 1952, Georgia Institute of Technology	Va.
Taylor, Clara Louise	Va.
Taylor, Daniel Albert, Jr.	D.C.
Taylor, Dorothy Elizabeth	Va.
Taylor, Eugene Field	Calif.
Taylor, Eugene Joseph A.M. 1948, University of Chicago	D.C.
Taylor, Freda Christine	D.C.
Taylor, George Bruce	Calif.
Taylor, Harris Matthew B.S. 1952, D.C. Teachers College	D.C.
Taylor, Jack Gilbert	D.C.
Taylor, James William	N.C.
Taylor, Jerry Delano	Va.
Taylor, John Carruthers	D.C.
Taylor, Karen Erickson	Va.
Taylor, Lorena Agnes	Md.
Taylor, Mary Florence	D.C.
Taylor, Mickey Neil	Oreg.
Taylor, Perry Root B.S. 1917, U. S. Naval Academy M.S. 1921, Massachusetts Institute of Technology	Va.
Taylor, Sidney Anderson	Md.
Taylor, William Omar, Jr. A.B. 1947, University of Mississippi	Md.
Teasley, Richard Edward B.S. 1952, D.C. Teachers College	D.C.
Tebbetts, Dorothy A.B. 1927, Smith College	D.C.
Tebbitt, Harry Knibb A.B. 1952, Colgate University	Md.
Tecza, Stanley Robert	N.J.
Tedder, Wilma M. B.S. 1940, M.S. 1957, University of Tennessee	Tenn.
Teeples, Thomas Clinton	D.C.
Teeter, Marilyn Arla A.B. 1957, Albright College	Pa.
Teeter, Walter William	Va.
Tehaan, Angela Rose	D.C.
Teimourian, Bahman B.S. 1955, Bethany College	Iran
Tejedor, Electo Garcia LL.B. 1943, University of Madrid	Spain
Telasky, William Eugene	N.Y.
Temperley, Russell E. B.S. 1957, Boston University	Mass.
Temple, Heina Klinker	Md.
Templeman, Mary Esther	Va.

Temples, Paul Jerome Va.

Tenenbaum, Milton D.C.
B.S. 1951, Syracuse University

Tenney, Richard Luman N.J.
A.B. 1957, Duke University

Tennyson, Georg Bernhard D.C.
A.B. 1953, The George Washington University

Tenold, Gene Clinton Minn.

Teoli, William Anthony, Jr. N.Y.
B.S. 1953, M.S. 1957, University of Notre Dame

Teplitz, Jerome Marvin Pa.
B.S. in Ch.E. 1957, Drexel Institute of Technology

Terauds, John Janis D.C.

Terry, David Thomas Ind.
B.S. in Ch.E. 1956, Purdue University

Terry, Edna Catherine Va.
B.S. 1928, Longwood College

Terry, Gilmer Roy Ala.

Terry, Guelda E. Va.

Terry, Peggy Jean Md.

Tervola, Olaf William Minn.

Teschner, David Va.
B.S. in E.E. 1955, Newark College of Engineering

Teter, Zola Lee Md.

Thach, John Smith, Jr. D.C.
A.B. 1957, The George Washington University

Thada, Grace Augusta Va.
A.B. 1954, The George Washington University

Thaden, Michael Edward Md.

Thanyajareon, Suthon D.C.

Tharp, Robert E. Md.

Tharpe, Henry Moffette, Jr. D.C.

Thatcher, Gordon Siddoway Idaho
B.S. 1955, Ricks College

Thatcher, Leland Lincoln Md.
B.S. 1944, University of Minnesota

Thatcher, Morris Llewellyn N.J.
B.S.E. 1955, Princeton University

Thau, Stephen Arthur Md.

Thayer, Harry Homer D.C.

Thayer, Janet Cornelia Va.
A.B. in Ed. 1957, The George Washington University

Thayer, Mary Susan Va.

Thayer, Patricia Bernice Md.

Theobald, Ursula McEnroy Md.
A.B. 1954, Barnard College

Theus, Lucius Ill.
B.S. 1956, University of Maryland

Thibodeau, Delmar Alfred D.C.
B.S. 1955, Georgetown University

Thiels, Louise Carpentier Md.
A.B. 1952, College of Notre Dame of Maryland

Thingstad, Per Johan Norway

Thoden, Richard John Va.
A.B. 1957, University of Virginia

Tholen, Albert David Md.
B.S. in C.E. 1949, Drexel Institute of Technology

Tholl, Natalie Marie D.C.

Thom, Gordon Alexander Canada
B.S. 1956, University of British Columbia

Thomas, Carl Otis D.C.
B.S. 1957, Texas College of Arts and Industries

Thomas, Carol Frances D.C.

Thomas, Catherine Olivia Va.

Thomas, Charles Ward Wash.
B.S. 1925, U. S. Coast Guard Academy
A.M. 1953, University of Washington

Thomas, Charles William Ill.
B.S. 1947, LL.B. 1949, Northwestern University

Thomas, Cleo Thelma Ky.

Thomas, Dolores Anne D.C.
B.S. 1954, Maryland State Teachers College, Bowie

Thomas, Dorothy Antionette D.C.

Thomas, Dudley Breckinridge N.J.
A.B. 1955, Washington and Lee University

Thomas Elizabeth Montgomery D.C.
B.S. 1955, Howard University

Thomas, Harrison Wendell D.C.
B.S. 1954, Maryland State Teachers College

Thomas, Henry Evans Va.

Thomas, J. Paul Md.
A.B. 1951, Wilkes College

Thomas, Jack Leon Va.

Thomas, James Alfred Va.
B.S. 1932, U. S. Naval Academy

Thomas, James Blake Va.
A.B. 1952, Wabash College

Thomas, James Carlin Ohio
A.B. (C.G.S.) 1957, The George Washington University

Thomas, James Rogers S.C.
B.S. 1950, Columbia University

Thomas, James William, Jr. Md.

Thomas, Jean Hewitt Md.
A.B. 1952, Connecticut College

Thomas, John George Md.
B.B.A. 1954, University of Miami

Thomas, John Penfield Conn.
A.B. 1957, St. Augustine's College

Thomas, Kyle Lewis Md.

Thomas, Lon Campbell Ga.

Thomas, Lynn Margery Va.

Thomas, Marjorie Phyllis Va.

Thomas, Norman Edward Va.

Thomas, Raymond Edward Md.
A.B. 1955, A.M. 1957, The George Washington University

Thomas, Richard Elwood D.C.

Thomas, Richard Marvel Md.
B.S. 1951, U. S. Coast Guard Academy

Thomas, Richard Rudolph Wash.

Thomas, Robert Lee Md.
A.B. 1955, Bridgewater College

Thomas, Virginia Carter Va.

Thomas, Willana Miss.
B.S. 1952, Mississippi Southern College

Thomason, Barbara Ann Md.

Thompson, Alan Joseph D.C.

Thompson, Ana Rita Md.
A.B. 1932, University of Puerto Rico

Thompson, Casper Morris Pa.
B.S. 1945, Pennsylvania State University

Thompson, Charles Wayne Kans.
A.B. 1955, College of Emporia

Thompson, Dorothy Moore D.C.
A.B. in Ed. 1955, The George Washington University

Thompson, Earl Leroy Texas

Thompson, Ellen Reeves
A.B. 1956, Wellesley College N.J.
Thompson, Evelina Van Metre Va.
Thompson, Forest Carson
B.S. 1932, U. S. Naval Academy Ind.
Thompson, Geraldine
A.B. 1949, The George Washington
University Md.
Thompson, James Edward
B.S. 1950, University of New Mexico
M.S. 1951, University of Wisconsin N.M.
Thompson, James Marsh
A.B. 1952, A.M. 1953, University of
Minnesota Va.
Thompson, Joe Howard
B.S. 1954, North Carolina College at
Durham D.C.
Thompson, John Charles
B.S. 1957, University of Rochester Va.
Thompson, Lenore Evelyn Va.
Thompson, Marion Dorinne Pa.
Thompson, Mary Elinor
B.B.A. 1957, Ohio State University Va.
Thompson, Milton Patterson
B.S. 1928, Georgetown University Tenn.
Thompson, Ogdon Clayton N.Y.
Thompson, Reading Aycock, Jr.
B.C.E. 1948, North Carolina State
College Va.
Thompson, Robert Tennis D.C.
Thompson, Roland Eugene
A.B. 1952, Washington and Lee
University Md.
Thompson, Roy Francis
B.C.E. 1957, Ohio State University Ohio
Thompson, Vera Eileen
B.S. 1951, Columbia University Md.
Thompson, William Edwin
B.C.E. 1930, Northeastern University Fla.
Thompson, William Frederick
B.S. 1957, The George Washington
University Md.
Thompson, William Walter Md.
Thomson, Charlotte Deyer N.J.
Thomson, Gladys Forsythe
B.F.A. 1937, A.M. 1940, Ohio State
University Va.
Thomson, Monica Eleanor D.C.
Thorne, Jean Musey Md.
Thornett, William Bertram Va.
Thornton, Bessie Zachery
B.S. 1945, St. Augustine's College
A.M. 1951, Hampton Institute D.C.
Thornton, Joseph Benjamin, Jr.
B.S. 1953, D.C. Teachers College D.C.
Thornton, Leonard Henry
A.B. 1957, University of Vermont D.C.
hornton, Martha Ella
A.B. 1938, Howard University D.C.
hornton, Michael
B.S. 1957, Muskingum College Ohio
hornton, Valery D.C.
horpe, Carter Nicholas
B.S. 1955, D. C. Teachers College Va.
horpe, Lois Janette
A.B. 1956, Vassar College N.Y.
orsteinsson, Peter J. E. Ill.
orsteinsson, Wanda Jean Ill.
orstenson, Ronald William N.J.
ouvenin, Violette Elsa
A.B. 1944, Hunter College
A.M. 1945, Columbia University D.C.
reatte, James Clinton S.C.

Throckmorton, William Robert
A.B. 1954, The George Washington
University Va.
Thurber, Rex G. Oreg.
Thurgood, William Andrew Va.
Thurman, James Ayton D.C.
Thurmond, Jean Crouch
B.S. 1947, Winthrop College S.C.
Thurston, Alice Janet
A.B. 1937, Denison University
A.M. 1938, Northwestern University Md.
Tibbets, Mary Alice D.C.
Tibbits, William Badger John D.C.
Tibbs, Elizabeth Moore D.C.
Tice, Ira Benoni, Jr. D.C.
Tiches, John James Va.
Tiches, Peter Charles Va.
Tidd, Joy Thomas
B.S. 1949, University of Nebraska
A.M. 1950, University of Denver Colo.
Tiedemann, John George
A.B. 1953, M.S. 1954, The George
Washington University D.C.
Tiedemann, Sheila Mary
A.B. 1954, The George Washington
University D.C.
Tielkemeier, Veril Howard Va.
Tierney, Louis Martin
B.S. 1947, University of Maryland Md.
Tierney, Richard Karl Va.
Tiffany, Warren Irving
A.B. in Ed. 1949, Ed.M. 1952, Western
Washington College of Education Alaska
Tighe, Walter Iowa
Tignor, Donald Madison
B.S. 1954, Howard University D.C.
Tilden, Anne Merry D.C.
Till, Meta Evelyn N.C.
Tilley, Rose Marie D.C.
Tillotson, Jeanne Louise
B.S. 1943, Florida State University Fla.
Tillson, Mollie Margaret
A.B. 1935, College of New Rochelle
LL.B. 1938, Catholic University of
America Md.
Tilton, Frederick Elinore Wash.
Tilton, James Elliott Texas
Timberlake, Frederick Clyde
B.B.A. 1951, Westminster College
M.B.A. 1954, Ohio State University Va.
Timko, Leona Veronica
A.B. 1956, Pennsylvania State
University Pa.
Timlin, Jerome Paul
B.S. 1956, University of Scranton Pa.
Timmons, Frank Leslie III
B.S. 1950, A.M. 1951, University of
Houston D.C.
Timotheou, Charles
B.S. 1953, Rider College D.C.
Timothy, Charlotte Anne Pa.
Timour, John Arnold
A.B. 1951, Miami University D.C.
Tindal, Donald Roger
B.S. 1954, University of Maryland D.C.
Tinley, Wilmer Leon, Jr. Va.
Tinsley, Dorothy Earhart Md.
Tinsley, Harold Richard D.C.
Tippens, James Anderson III Va.
Tippett, James Talbot
B.E.E. 1954, North Carolina State
College Md.
Tipton, Ronald Graham Md.

Tischler, Charles Merle Pa.
A.B. 1952, M.S. 1954, Columbia University
Titcomb, George Emile D.C.
Titlow, Richard Emory Md.
Titus, Donald Colman Md.
B.S. 1957, Johns Hopkins University
Titus, Louis Templar Va.
Tkach, George Ill.
Tkach, Helen Gladys Va.
A.B. 1941, Chatham College
Toal, Mary Lois Allison Kans.
Tobias, Jerry Jerome N.Y.
B.S. 1948, Syracuse University
Tobias, Thomas Victor Mich.
Tobin, Vincent Francis Pa.
Tockert, Ruth Mary D.C.
Todd, Carl Wilbur D.C.
Todd, John Amos, Jr. D.C.
B.S. in P.E. 1956, The George Washington University
Todd, Neil Bowman Mass.
Todd, Walden Robert Va.
Toggas, Samuel Thomas Md.
Toland, Martha Jo S.C.
Tolford, John Charles Md.
A.B. 1954, University of Michigan
Toliver, Ellen Porter D.C.
B.S. 1948, Tuskegee Institute
Tollberg, Stanley Hamilton Md.
B.S. 1957, University of Maryland
Tolley, Gird MacDonald, Jr. W.Va.
Tolliver, Alice Elizabeth Va.
Tolliver, Daniel Rush Va.
Tolson, Jean Elizabeth Pa.
B.S. 1955, Columbia University
Tolson, Raymond Lee Va.
B.S. in P.E. 1951, The George Washington University
Tom, Joni Texas
Tomar, Russell Herman D.C.
Tomcykowski, William David Nebr.
Tomey, Carol Janice N.C.
Tomkins, Leonard George Va.
Tomlinson, Fred Brownell Ga.
A.B. 1955, The George Washington University
Tomlinson, Muriel Adah Va.
Tomlinson, Ross Edgar Md.
Tommer, Sheldon Jerome D.C.
Tompkins, Donald Charles N.J.
A.B. 1954, Tusculum College
Tompson, Robert Vaughn Mo.
Tonelli, Inez Mary D.C.
Tonelli, Loretta Anna D.C.
Toner, Mary Cunningham Va.
Toole, Michael Aloysius D.C.
Toomey, John Samuel Tenn.
A.B. 1949, The George Washington University
Toompas, Charles Arthur W.Va.
A.B. 1938, West Virginia University
A.M. 1950, The George Washington University
Toompas, James Angelo Va.
B.S. 1949, Davis and Elkins College
Toothman, Harold Lee D.C.
B.S. 1957, The George Washington University
Topalian, Lillian Mildred D.C.
A.B. 1953, Western Maryland College
Topalian, Nora Pauline D.C.
A.B. 1949, University of Maryland
Topping, Thomas Edwin D.C.

Torcaso, Roy R. Wash.
Torchia, Rosalyn Isabel Va.
Torchin, Norman Gilbert D.C.
B.S. 1951, The George Washington University
Torpey, Margaret Mathilde Md.
Torrence, Dale Owen N.C.
A.B. 1956, University of North Carolina
Torres, Adan Young D.C.
Totten, Gertrude Ruth N.J.
Totz, Myra L. Md.
Touafe, Daniel Ethiopia
Touceda, Maria Enriquetta Va.
Touchette, Robert Henry Md.
Tower, Mary Cunningham Va.
Towle, Agnes Geraldine Va.
Towles, William Julian Calif.
A.B. 1954, Occidental College
Towne, William R. II D.C.
B.S. in B.A. 1951, University of Florida
Townes, Irene Olds D.C.
B.S. 1943, A.M. 1949, Virginia State College
Townes, Martha Jane Va.
A.B. 1957, Mary Washington College
Townsend, George Franklin, Jr. Calif.
Townsend, Robert Shaw Md.
A.B. 1953, University of Maryland
Townsend, Roger Raynham, Jr. Va.
Townsend, Woodrow Emory D.C.
A.B. in Govt. 1955, The George Washington University
Towson, Robert Fenn, Jr. D.C.
A.B. in Govt., A.M. in Govt. 1952, The George Washington University
Tracey, Margaret Catherine D.C.
Tracy, Francis Gerald Md.
B.S. in Ed. 1952, University of Scranton
Tracy, Philip Monroe N.Y.
Trahanas, Stephen Peter Va.
Traina, Dominick Robert D.C.
B.S. 1942, University of Maryland
Trainor, Bernard Edmund N.Y.
B.S. 1951, College of the Holy Cross
Trask, David Knowlton D.C.
Trask, William Wyatt Va.
Travers, Robert Lee Va.
Travers, William Robert D.C.
Traversone, George Joseph Md.
Travesky, Paul David Md.
Travis, Clyde Eugene D.C.
B.S. 1950, Howard University
Trbovich, Robert L. Md.
A.B. 1951, Hobart College
Treiber, Elizabeth Anne Va.
Trela, Frances Rosalie Ill.
Tremain, Kenneth Dale Ohio
B.S. 1956, Purdue University
Trenis, Bertrand Ewell, Jr. Va.
B.S. 1936, Georgetown University
Trevas, Suzanne Carole Md.
Trexler, Edward Coleman, Jr. Va.
B.S. in A.E. 1953, Virginia Polytechnic Institute
Treynor, Paul Ernest Md.
Tribble, William Mason Va.
Trigo-Ramirez, Julio Md.
B.S. 1953, University of Maryland
Trimas, Marvin Pa.
B.S. in I.E. 1956, Pennsylvania State University
Trimble, Richard Clarence Va.
A.B. 1950, Kansas State Teachers College, Emporia

Triplett, Clyde William, Jr. D.C.
B.S. 1957, University of Maryland
Triplett, Robert Samuels Ky.
B.S. 1940, University of Kentucky
A.M. 1943, University of Chicago
Trippe, Turner Clarence, Jr. Md.
B.S. in B.A. 1943, New York University
Trites, Harriet Grace Va.
A.B. 1927, Wayne University
Trittipoe, Theresa Golovin D.C.
A.B. 1955, A.M. 1957, The George Washington University
Trittipoe, William Jennings D.C.
A.B. 1956, The George Washington University
Trocino, Frank Philip N.J.
A.B. 1956, University of Maryland
Trofi, Vincent C. D.C.
A.B. 1952, Providence College
Troop, Richard Gordon Va.
B.S. 1952, University of New Hampshire
Tropf, William Jacob, Jr. Va.
B.S. 1948, Northwestern University
Troshinsky, Charles Hilary D.C.
A.B. 1954, The George Washington University
Troth, John Randolph Md.
Trotter, James Woodrow Md.
Trousof, Natalie D.C.
A.B. 1947, A.M. 1950, Columbia University
Trowbridge, Mildred Davis D.C.
Troy, Sylvia Carol Va.
A.B. 1956, University of Michigan
Troy, Theodore Wylie Va.
Truchin, Mary Beth N.Y.
Trueblood, Guerdon Saltonstall Va.
Truesdell, Alfred Hemingway Md.
A.B. 1957, Oberlin College
Truesdell, Donovan Fred Md.
Truitt, Willis Harrison D.C.
Truntich, Donna Barbara Pa.
Truntich, Paul Joseph Pa.
Trychin, Samuel, Jr. Va.
Tryon, Lianne Va.
Tryon, Melvin Edward Va.
Tsakos, Steven D.C.
Tschursin, Nikolai Va.
Tseronis, Constantine Harry D.C.
Tsien, Yi D.C.
A.B. 1951, Taiwan University, Formosa
A.M. 1957, University of North Carolina
Tsunoda, Koichi D.C.
Tubaugh, Harry Shirley Va.
Tubbs, Evelyn Jackson Va.
A.B. 1950, Madison College
Tubbs, Henry Willard, Jr. Va.
A.B. 1949, Monmouth College
Tubman, Jefferson Lord Mass.
B.S. in C.E. 1956, University of Massachusetts
Tubman, Katherine Gibbs Md.
Tuchler, Michael Md.
Tucker, Carolyn Elizabeth D.C.
Tucker, Donald Julius N.Y.
A.B. 1951, Cornell University
Tucker, Frederick Birchfield D.C.
B.S. 1939, U. S. Naval Academy
Tucker, James Lawrence Va.
Tucker, John Francis Porter Conn.
A.B. 1935, Wesleyan University
Tucker, John Robert Va.
A.B. 1951, University of Maryland
M.I.A. 1955, Columbia University
Tucker, John Stewart D.C.
Tucker, John Thomas Va.
Tucker, Margaret Olivia D.C.
Tucker, Robert Paul Md.
Tucker, Robert Wheeler Va.
Ph.B. 1931, University of Chicago
Tucker, Sarah Rogers Md.
B.S. in Ed. 1950, D. C. Teachers College
Tulipane, Thomas Theodore Ohio
B.S. 1957, University of Maryland
Tulk, Stanley Gordon, Jr. Mich.
Tull, Phillip Eugene D.C.
Tull, Stanley D.C.
Tuller, Gertrude Owen Va.
Tullis, Sarah Hoover Va.
A.B. 1953, Middlebury College
Tully, Mary Emmerson D.C.
Tully, Nancy Jean Va.
Tully, Richard Edward D.C.
A.B. in Govt. 1950, The George Washington University
Tuma, Barbara L. D.C.
B.S. 1956, University of Maryland
Tumbleson, Reginald Delmer Va.
A.B. 1951, University of California
Tunnell, Lenore M. Texas
A.B. 1934, A.M. 1943, Texas Technological College
Tuohey, Conrad Gravier Va.
Tupling, Elizabeth Jane D.C.
Tupman, Wilbur Crandell Va.
B.I.E. 1949, Georgia Institute of Technology
Turber, Patricia Kay Ind.
Turbin, James Leslie W.Va.
Turk, Thad Howard Wyo.
Turkiewicz, Jan Michal Fla.
Mus.B. 1951, Juilliard School of Music
Turner, Alice Rene D.C.
Turner, Asta D.C.
Diploma in Law 1942, University of Tartu, Estonia
Turner, Donna Joanne D.C.
A.B. 1954, Smith College
Turner, Edith Smith Va.
B.S. 1941, M.S. 1945, Virginia State College
Turner, Florence Elaine D.C.
Turner, Fulton Francis D.C.
Turner, John Owen Md.
Turner, Margaret Arnold D.C.
Turner, Mary Johnston D.C.
A.B. 1951, The George Washington University
Turner, Robert Eugene D.C.
Turner, Roger Wickersham D.C.
Turner, William Howard Va.
Turney, Jack Rush Md.
A.B. 1956, Western Maryland College
Turnier, Clotilde D.C.
Turnier, Mireille D.C.
Turpin, Elinore Scheibe Va.
Thurton, Howard Johnson Conn.
B.S. 1932, U. S. Naval Academy
Turtora, John Joseph Va.
B.S. in E.E. 1949, College of the City of New York
Tuttle, Nancy Givin Ill.
Twentyman, Chester Howard Va.
Tyerman, Peter A. Calif.
A.B. 1957, University of Oregon
Tyler, George Scott Calif.
A.B. 1954, University of California at Los Angeles
Tyler, Marie Rita Va.

Tyler, Royall	D.C.
A.B. 1957, Harvard University	
Tyler, Sarah Truax	Va.
Tyndall, Elmer Newton	Del.
A.B. 1952, Sacramento State College	
Tyree, Eugene Frederick	D.C.
A.B. 1941, Kentucky State College	
Tyrrell, Dorothy Phillips	Md.
Tyser, Russell Thomas	Va.
Tyson, Nancy Elizabeth	D.C.
A.B. 1956, The George Washington University	
Tzaperas, Nickolas Anastasis	Md.

U

Ubel, Judi Charlene	Minn.
Udris, Anda	D.C.
Uehlinger, John Clark	N.M.
A.B. 1951, The George Washington University	
Ugaz, Juan Cesar	D.C.
Ugel, Arthur Richard	D.C.
Uhl, John Phillip	Va.
Uilkema, John Klaas	Ind.
B.S. in M.E. 1957, University of Michigan	
Ullom, Ruth E.	Va.
Ulmer, James Mitchell	Md.
Ulrey, Walter Earle	D.C.
Ulsamer, Marjorie Elsene	D.C.
A.B. 1945, University of Arizona	
Ulshafer, Clarence Benton	Va.
Umbel, Richard Port	Md.
B.S. 1943, Bethany College	
B.S. 1946, U. S. Naval Academy	
Underwood, Norman Glen	Calif.
A.B. 1955, University of Arizona	
Underwood, Paula Lora	D.C.
Underwood, William Allen	D.C.
A.B. 1933, Harvard University	
LL.B. 1942, Yale University	
Unger, Ella Lederer	Md.
B.S. 1928, New York University	
A.M. 1937, New York University	
Updike, Jon Edward	D.C.
A.B. 1957, The George Washington University	
Updike, Mary Sue	D.C.
Uphoff, Jean A.	D.C.
Uphoff, Robert Lee	Nebr.
Upshaw, William Francis	Fla.
B.S. 1951, M.S. 1953, Florida State University	
Urabe, Tohru	Japan
Urbach, Peter Frank	N.Y.
B.S. in E.E. 1957, Carnegie Institute of Technology	
Urbanski, Frank Xavier	N.J.
B.S. 1957, Dickinson College	
Uria, Miguel Rey	Cuba
Bachillerato 1955, University of Habana, Cuba	
Urich, David Allan	D.C.
A.B. 1956, The George Washington University	
Urich, George Hans	N.Y.
Usilton, Joseph Leo	D.C.
Usilton, Ray Roy	Md.
Usiskin, Lawrence G.	N.Y.
Ustun, Semih Aydemir	Md.
A.B. 1953, The George Washington University	
Utley, Frank Herbert	Md.
B.E.E. 1954, The George Washington University	
Utt, William Ernest	Md.
B.C.E. 1952, University of Delaware	
Utterson, Jeannette Stepp	Md.
Uyehara, Geoffrey Umio	Japan
A.B. 1955, The George Washington University	

V

Vacharasiritham, Vanida	D.C.
Vagelos, Diana Touliatos	Md.
A.B. 1955, Columbia University	
Vahouny, George Vartkes	Va.
B.S. 1953, M.S. 1955, The George Washington University	
Vaiden, Georgia Anna	W.Va.
Vail, Thomas L. C.	Va.
A.B. 1956, The George Washington University	
Vail, William Frederick	Va.
Vaill, Dorothy Louise	Mass.
A.B. 1956, The George Washington University	
Vakos, George William	Va.
A.B. 1953, College of William and Mary	
Valderrama, Manuel	Bolivia
Licenciate 1949, Saint Andrews University, Bolivia	
Valderrama, Nicasio Gonzalez	Philippines
A.B. 1957, The George Washington University	
Valdivieso, Felipe	Peru
Valencia, Rodney George	D.C.
Valente, Carlos Roberto Ferreira	Brazil
Valenti, Josephine Carmela	D.C.
Valentine, Artrice Frissell	Va.
B.S. 1956, Hampton Institute	
Valentine, Eleanor Ann	Va.
Valentine, Sylvia Maxine	D.C.
Valenziano, Zena Nunzia	D.C.
A.B. 1940, Louisiana State University	
A.M. in Ed. 1955, The George Washington University	
Valge, Ado	D.C.
B.C.E. 1957, The George Washington University	
Valladares, Carl Edwin	Calif.
Valotto, Evelyn Wilson	Va.
B.S. 1951, West Virginia University	
Valpey, Helen Vergutz	Va.
B.E. 1944, Wisconsin State College	
Van Ausdal, James Frederick	Ohio
A.B. 1940, Miami University	
Van Bebber, Mary Lillian	Okla.
A.M. 1954, University of Maryland	
Van Blois, Robert Lewis	Pa.
Van Buren, John Miller	Md.
A.B. 1944, Dartmouth College	
M.D. 1947, Columbia University	
M.S. 1950, McGill University	
Van Camp, James William	Md.
Vance, Anthony Charles	Pa.
B.S. 1954, Pennsylvania State University	
Van Cleef, Frederick Lester	D.C.
Vanden Bos, Joyce	Va.
Vandenburg, John Perley	Va.
B.S. in E.E. 1956, University of Michigan	
Vanderpool, Guy Roger	Ark.
A.B. 1956, Harding College	

Vandersluis, Howard J., Jr.	Va.
B.S. 1950, U. S. Military Academy	
Vanderzon, Matthias M.	D.C.
Vandevort, Robert Charles	D.C.
Van Duyne, Edward Norman	N.J.
Van Every, David Berl	Va.
A.B. 1955, University of California at Los Angeles	
Van Fleet, William Vernon	D.C.
A.B. 1957, The George Washington University	
Van Handenhove, Roger	D.C.
Van Horn, Robert Means	Mo.
A.B. 1956, The George Washington University	
Van Horn, William Lewis	Va.
B.S. 1955, West Virginia University	
M.S. 1957, University of Arizona	
Van House, Rita E.	Nebr.
Van Inwegen, Ardiss Bene	N.Y.
Van Kirk, Roger Alan	N.J.
B.S. in E.E. 1957, University of Vermont	
Vanroy, Richard Nash	Va.
Van Sanford, Gordon Myron	D.C.
A.B. 1949, J.D. 1954, The George Washington University	
Van Santen, John Henry, Jr.	Ohio
Van Slyke, Beverly Ann	Md.
A.B. 1956, University of Maryland	
Van Solkema, Jacquelyn	Mich.
A.B. 1956, Calvin College	
Van Swearingen, Earl Kendall	Va.
B.S. 1927, U. S. Naval Academy	
Van Trump, Beverly Jo	Md.
A.B. 1957, The George Washington University	
Van't Veld, Cecil William	Md.
Van Wie, Francis Ogden	Md.
Van Zante, Donnalee	Va.
A.B. 1951, Parsons College	
Vardaman, Alice Porter	Ala.
A.B. 1957, The George Washington University	
Vardeman, William Westwood	Mo.
B.S., A.B. 1955, Central Missouri State College	
Varela, Federico Guellermo	Bolivia
A.B. in Govt. 1956, The George Washington University	
Vargo, Frank John	Va.
B.B.A. 1948, Fenn College	
Vargosko, Andrew John, Jr.	Conn.
B.S. 1951, University of Maryland	
M.S. 1953, The George Washington University	
Vargosko, Audre Prowell	D.C.
A.B. 1951, University of Maryland	
Varley, Edward Joseph	Va.
Varley, Orville Wray	Pa.
Varley, Thomas Clair	Pa.
Varmer, Borge Kvamme	Md.
Cand. Juris 1950, University of Copenhagen	
M.C.L. 1954, The George Washington University	
Varn, Celita Blevins	Va.
Vartzikos, Nicholas	Wis.
Vassil, John Charles	Ohio
B.S. in Ch.E. 1952, Carnegie Institute of Technology	
Vasta, Bruno Morreale	Md.
B.S. 1955, Georgetown University	
M.S. 1957, The George Washington University	
Vaubourdolle, Catherine Monique	France
Vaughan, Charles B.	Md.
A.B. 1951, College of Steubenville	
Vaughan, Elizabeth Lucille	Ala.
Vaughan, Frances Elizabeth	Va.
A.B. 1957, Duke University	
Vaughan, James Willard, Jr.	N.C.
B.S. in E.E. 1957, Duke University	
Vaughan, Joan Marie	N.Y.
A.B. 1956, Nazareth College	
Vaughan, Mary J.	D.C.
Vaughan, Robert Nash	D.C.
A.B. 1957, The George Washington University	
Vaughn, Donald Keith	D.C.
B.S. in M.E. 1951, Tri State College	
Vaughn, Jane Taylor	Md.
Vaughn, Jerry Benjamin	D.C.
Vaughn, Raymond Lyle	S.D.
Vazquez, Alberto Wanous	Mexico
Veach, Fred John	N.Y.
Veerhoff, Gail Amy	D.C.
Veinbergs, Ilze	D.C.
Veit, Harold Robert	Md.
B.S. 1953, Pennsylvania State University	
Veitch, Patience Cheyenne	D.C.
Velarde, Carlos Alberto	Panama
A.B. 1952, Ripon College	
M.B.A. 1955, Indiana University	
Velarde, Raul J.	Peru
Venditti, John Michael	Md.
B.S. 1949, M.S. 1957, University of Maryland	
Verdross, Christine	Va.
Verkler, Jerry Thomas	N.M.
A.B. 1954, University of New Mexico	
Verkouteren, Theodore Robert	Md.
B.S. 1951, University of Maryland	
Verme, James	N.J.
B.S. 1951, Boston College	
Vesper, Gerald Wallace	N.Y.
Vesper, Nancy Rucker	Va.
B.S. 1957, The George Washington University	
Vessey, Agnes	Md.
Vest, Charles Eugene	Va.
B.S. 1950, Virginia Polytechnic Institute	
Vest, Edward Nelson	Md.
Vest, Tempie Tolbert	D.C.
A.B. 1941, Shaw University	
Vestersten-Kirchakov, Nikolai	Sweden
Vestrich, Alan I.	D.C.
B.S. 1950, Brooklyn College	
M.B.A. 1953, University of Texas	
Vetter, Charles Thomas, Jr.	D.C.
A.B. 1946, Hamilton College	
LL.B. 1953, National University	
Vetter, Fred William, Jr.	Wis.
Verdeyen, Irene Ellen	Ill.
Vickers, Robert Vernon	Ind.
B.M.E. 1957, General Motors Institute	
Vickers, Ruth Elizabeth	N.Y.
Vickers, William Lee	Md.
B.S. in C.E. 1950, The Citadel	
Viehman, Evelyn Hoffman	Va.
A.B. 1943, University of Illinois	
Viehman, Robert C.	Va.
A.B. 1943, University of Illinois	
Vierling, Bernard Julius	Va.
B.S. 1936, Stanford University	
Vierling, Martha Peairs	Va.
A.B. 1937, Stanford University	

Viguera, Edward Edwin	D.C.
A.B. 1950, The George Washington University	
Villarejo, James Victor	N.Y.
A.B. 1939, University of Wisconsin	
Diploma 1951, University of Paris	
Villaret, Armand	D.C.
Villarreal, Hormandin Benavides	Texas
A.B. 1957, Southeastern State College	
Villavicencio, Maria E.	D.C.
Vincent, Thelma Paulin	Wis.
A.B. 1935, Bates College	
Vinkenes, Stanley Charles	Va.
A.B. in Govt. 1957, The George Washington University	
Violette, Homer Eugene	Md.
B.M.E. 1952, Catholic University of America	
Viranuvatti, Vilavan	Thailand
A.B. 1950, Chulalongkorn University, Thailand	
Visek, Franklin Joseph	Nebr.
B.S. 1957, Municipal University of Omaha	
Visconti, Frances Rose	Ohio
Visser, Cornelius Henry	Utah
B.S. 1955, University of Utah	
Vita, Francis Nicholas	D.C.
Vithyno, Elly	D.C.
A.B. 1935, American College for Girls, Turkey	
Diploma 1939, Instanbul University, Turkey	
Vitkovitsky, Slawka Ivanna	N.Y.
Vitone, George Peter	Va.
A.B. 1952, Columbia University	
Vleek, Frances Julia	D.C.
Voci, Malcolm David	Va.
Vodzak, Georgia Ann	Pa.
Voegtli, John William	Md.
Voesar, Viia	Pa.
Vogel von Vogelstein, Cornelius R. P.	D.C.
Vogl, Allan Frederick	Md.
B.S. 1931, M.S. 1950, Ithaca College	
Vogt, John Henry	N.Y.
Vohs, Ralph Herman	Mo.
Voigt, Jack Wendel	Tenn.
B.S. 1956, Tennessee Institute of Technology	
Volz, Joyce Ward	Va.
A.B. 1951, University of Maryland	
Von Rosenberg, Gretchen Kateri	Va.
Voorhees, Louis Eugene	Calif.
A.B. 1942, Fresno State College	
Vorck, Robert H., Jr.	Va.
B.S. 1952, Columbia University	
Vosbeck, Elizabeth Just	Md.
B.B.A. 1947, University of Minnesota	
Voutilainen, Maria Elisabeth	Finland
Vranicar, Raymond Nicholas	Ill.
B.S.E. 1942, University of Illinois	
Vratimos, John	Ill.
A.B. 1956, Northwestern University	
Vu, Ngoc Hau	Vietnam
Vudheporn, Benjamin	D.C.
Vukovich, Anna	D.C.
A.B. 1949, University of Michigan	
Vuthuvan, Hoang	Vietnam
A.B. 1956, Marycrest College	

W

Wacks, Ruth Smart	Va.
Wade, Dorothy A.	Va.
Wade, Elizabeth Elaine	Kans.
Wade, Guy Lamar	Md.
A.B. 1942, Mercer University	
Wade, Josephine Simons	D.C.
B.S. 1937, D.C. Teachers College	
A.M. 1951, New York University	
Wade, Manley Burt	Hawaii
A.B. 1953, Pacific Union College	
Wade, Margaret	Mass.
Wadleigh, Edythe G.	Va.
A.B. 1935, A.M. 1936, Columbia University	
Wadleigh, Francis Rawle	Conn.
A.B. 1956, University of Maryland	
Wadleigh, John Russell	D.C.
A.B. 1956, The George Washington University	
Wadlington, Ruth Hardie	Va.
Wadsworth, Harold Wayne	Utah
B.S. 1952, Utah State Agricultural College	
Waggaman, Thomas Ennalls III	Md.
Wagner, Clinton Baker	Va.
Wagner, Mildred Birdella	Pa.
Wagner, Miriam	D.C.
Wagner, Reginald W.	Fla.
Wagner, William Francis	Md.
B.S. 1947, U. S. Naval Academy	
Waibel, Grace Theodora	Minn.
A.B. 1944, College of St. Catherine	
Waid, McTurner	Va.
B.S. 1951, Lynchburg College	
Waithe, Evans Lorenzo	N.Y.
B.S. 1957, College of the City of New York	
Wakabayashi, Shigeru	Japan
B.S. 1952, Trinity University	
Walbeck, Carl David	Va.
B.E.E. 1951, University of Delaware	
Waldbuser, Norma Jean	Ill.
Walden, Linda Ellen	Va.
Waldman, Morton Bertram	N.J.
A.B. 1954, Lafayette College	
Waldroup, Lillian Mae	Ky.
Walensky, Norman Aaron	N.J.
B.S. 1957, Muhlenberg College	
Walker, Charles Tait	Md.
Walker, Dan McMurray	Va.
Walker, Diane Leigh	Va.
A.B. 1956, Wellesley College	
Walker, Edward Fletcher, Jr.	Va.
Walker, Ernest Carroll	Md.
A.B. in Govt. 1956, The George Washington University	
Walker, Herman Abington	Va.
Walker, Howard Stuart	Va.
Walker, James Franklin	N.C.
B.S. 1949, Hampton Institute	
Walker, John Henry	Fla.
Walker, John Henry	Va.
A.B. 1957, University of South Dakota	
Walker, John William	D.C.
Walker, Louise B.	Ky.
A.B. 1940, Mount St. Joseph College	
Walker, Nancy	Fla.
Walker, Nancy Anne	N.C.
A.B. 1955, University of North Carolina	
Walker, Olie Horsman	Md.
B.S. 1942, Maryland State Teachers College, Salisbury	
Walker, Peter Van Gilder	Va.
Walker, Raymond Francis	D.C.
Walker, Sally Ann	Md.

Walker, Sidney Joseph B.S. 1942, Eureka College LL.B. 1949, University of Miami	Ill.
Walker, Walter Anthony	Va.
Walker, Wendell Sutton	Md.
Walker, William Oscar	Md.
Walkoff, Charles Stanley	Conn.
Wall, Conrad Grey	Md.
Wall, Eulalia Louise A.B. 1927, Southern Methodist University A.M. 1957, The George Washington University	Texas
Wallace, Abigail Kathleen	Mass.
Wallace, Bradley Nelson	Md.
Wallace, Elizabeth Ann	Md.
Wallace, Joann Paula	D.C.
Wallace, Peggy Lee	Va.
Wallace, Phyllis A. A.B. 1943, New York University A.M. 1944, Ph.D. 1948, Yale University	D.C.
Wallace, Richard Warner B.S. in E.E. 1951, Purdue University	Md.
Wallace, Samuel Delmar, Jr.	Fla.
Wallace, Wendell Charles B.S. 1951, University of Pittsburgh M.S. 1956, Howard University	D.C.
Wallen, Louise Ramona	Va.
Wallen, Robert Carlisle	Mass.
Waller, John Robert B.S. 1953, Georgetown University	Md.
Wallin, William Leroy	D.C.
Wallman, Arthur Andrew B.S. 1957, Queens College	N.Y.
Wallrodt, George Raymond	D.C.
Walnut, Aylward Jerome A.B. 1952, A.M. 1956, The George Washington University	N.J.
Walsh, Christopher Michal	D.C.
Walsh, Helen Frances A.B. in Ed. 1946, A.M. in Ed. 1947, The George Washington University	D.C.
Walsh, John Patrick B.S. in Ed. 1939, New York State College for Teachers, Buffalo M.S. in Ed. 1947, Cornell University	Va.
Walsh, John Patrick B.S. 1940, University of Illinois A.M. 1941, Catholic University of America Ph.D. 1948, University of Chicago	Va.
Walsh, Joseph Patrick B.E.E. 1953, Manhattan College	Va.
Walsh, Quentin Robert B.S. 1940, U. S. Coast Guard Academy	Md.
Walsh, Virginia Claire	N.J.
Walsh, William Richard	D.C.
Walter, Jacqueline Ann A.B. 1950, Western Maryland College	D.C.
Walter, Joan Rowe	D.C.
Walter, Wilfred Aves B.S. 1930, U. S. Naval Academy	Fla.
Walters, James Dale	Pa.
Walters, Jessie Miller	Va.
Walters, Merlin Paul B.S. in M.E. 1944, Lehigh University	Va.
Walters, Willa May	D.C.
Waltman, Vera Melia A.B. 1950, A.M. 1953, University of Chicago	N.Y.
Walton, Ida Ann	D.C.
Walton, Samuel Lynnwood, Jr. B.S. in Ch.E. 1952, Grove City College B.S. in F.S. 1957, Georgetown University	Va.
Walz, Peter Frank	Minn.
Wang, Chung Chiang B.S. 1952, Iowa State College	N.Y.
Wang, Don Cue	D.C.
Wangner, Charlotte Evelyn	Md.
Waniga, Howard Alexander B.S. 1952, Davis-Elkins College	Md.
Ward, Carl Gwynne A.B. 1954, West Virginia University	W.Va.
Ward, David Hugh B.S. 1957, Rensselaer Polytechnic Institute	Va.
Ward, Freda Gower A.B. 1953, Southern Illinois University	Md.
Ward, Hugh Walter, Jr.	Fla.
Ward, Jack Anderson B.S. 1956, Tennessee Polytechnic Institute	Tenn.
Ward, James Parker B.S. 1953, University of Nebraska	Nebr.
Ward, Jerry Robin	Va.
Ward, John Lawrence	Md.
Ward, Joseph Leo A.B. 1951, University of Nevada	Nev.
Ward, Julia A.B. 1923, Ph.D. 1940, Bryn Mawr College	D.C.
Ward, Lee Butler	Md.
Ward, Mary Jane A.B. 1943, Salem College M.S. 1947, West Virginia University	Md.
Wardak, Mohammed Anwar A.B. 1954, Kabul University, Afghanistan	Afghanistan
Warde, Edith Megill	D.C.
Wardell, Richard Norman B.S. 1952, Illinois Institute of Technology	D.C.
Warden, Ernest Albert A.B. 1955, Municipal University of Wichita	Kans.
Warden, William Franklin, Jr. A.B. 1954, John B. Stetson University	Fla.
Ware, Martha Lou A.B. 1951, LL.B. 1953, University of Texas	D.C.
Ware, Virginia Evelyn	D.C.
Warfield, Anna Eletheer	D.C.
Warfield, Richard Myers A.B. 1948, The George Washington University	Md.
Warford, Mildred	Minn.
Warlick, George William B.S. in E.E. 1956, Duke University	D.C.
Warlick, Robert Patterson A.B. 1948, Brown University M.B.A. 1950, Harvard University	N.C.
Warman, Joseph Robert	D.C.
Warner, Nella Swart	Mich.
Warren, Donald Allan	D.C.
Warren, Frank Randall	Va.
Warren, Gloria L. E.	Va.
Warren, John Edgar B.S. 1956, University of Maryland	N.J.

Warren, William Stuart Del.
A.B. 1956, Dartmouth College
Wartofsky Leonard D.C.
Wash, Barbara Jean Va.
Wash, Charles Edward Va.
A.B. 1953, University of Virginia
Washenko, Carl Allen Pa.
Washington, Geraldine Holland D.C.
B.S. 1944, Hampton Institute
A.M. 1954, New York University
Washington, Lillian Kiracofe D.C.
Washington, Martha May Pa.
Washington, Phyllis Bailey D.C.
B.S. 1936, Howard University
A.M. 1954, New York University
Wasilewski, Peter Joseph D.C.
Wasserman, Donald Edward Va.
Wassilien, Adolf George D.C.
Watanabe, Takashi Japan
Watanabe, Yasuko Japan
Waterman, Emily Morrison D.C.
Waterman, Guy Van Vorst D.C.
A.B. 1953, The George Washington University
Waters, John Warren D.C.
A.B. 1951, Morgan State College
Waters, Mary Jane Conn.
Waters, Mildred Louise Va.
Waters, Robert Loren Md.
A.B. 1948, Ohio Wesleyan University
Waterval, Richard Adolf Va.
A.B. 1952, University of Maryland
Wathen, Henry Lancaster D.C.
Watkins, Charlotte Ridley Md.
B.Mus. 1936, Curtis Institute of Music
Watkins, Clarita Maxine Md.
A.B. 1955, University of Maryland
Watkins, Helen Adeline D.C.
Watkins, John Miller Va.
A.B. 1954, DePauw University
A.M. 1955, Northwestern University
Watkins, Robert Malcolm, Jr. D.C.
Watkins, William Tatum D.C.
A.B. 1950, The George Washington University
Watrous, Naoma Dicksion Md.
B.S. in H.E. 1940, Oklahoma College for Women
M.S. in Ed. 1950, University of Oklahoma
Watson, Callie Lavon Va.
Watson, Dorothy Minter Ga.
Watson, Ernest John Va.
Watson, Harold Kirk Conn.
B.S. 1956, Bates College
Watson, Jack Merrill Nev.
Watson, James Arthur Md.
B.S. in Ed. 1951, West Virginia University
Watson, Neil C. Va.
Watson, Robert Carlyle Va.
A.B. in Govt. 1953, The George Washington University
Watson, W. Scott, Jr. Md.
Watt, Frank Marion, Jr. D.C.
Watt, Jean Rae Md.
Watterson, James Godfrey Ohio
B.S. 1954, Case Institute of Technology
Watts, Carole Frances Md.
Watts, Harriet Mayor D.C.
A.B. 1956, Radcliffe College
Watts, Luis Edmund Va.

Watts, Victor, H. D.C.
B.S. 1943, University of Georgia
Watwood, Lynn Marion, Jr. Va.
A.B. 1955, The George Washington University
Waugh, Carolyn Lydia Maine
A.B. in Ed. 1949, A.M. in Ed. 1950, The George Washington University
Way, Katharine D.C.
B.S. 1932, Columbia University
Ph.D. 1938, University of North Carolina
Way, Virginia Vollmer Md.
Weademan, George Henry D.C.
A.B. 1951, Columbia University
Weatherhead, Georgia Cort Va.
A.B. 1951, Pomona College
Weatherhead, Milton N. Va.
A.B. 1945, Princeton University
Weaver, David Laurence Md.
Weaver, Dorothy Marie D.C.
A.B. 1935, Reed College
A.M. 1942, Mills College
Weaver, James Richard Pa.
B.S. 1957, Elizabethtown College
Webb, Dorise Jean D.C.
Webb, Edwin Yates Md.
Webb, Harold N.Y.
B.S. 1953, University of Alabama
Webb, Harold Lloyd N.C.
A.B. 1952, University of North Carolina
Webb, Kenneth William D.C.
A.B. in Govt. 1949, The George Washington University
Webb, Ronald Ernest D.C.
Webb, William Thayer, Jr. D.C.
B.S. 1952, D.C. Teachers College
Webb, William Y. Pa.
A.B. 1956, Dartmouth College
Webber, Frederick Nelson Va.
Webster, David Brubaker N.J.
A.B. 1952, Temple University
A.M. 1956, University of Wisconsin
Webster, Jo Ann Ind.
Webster, John Clyde Ind.
Webster, Robert Oswald Va.
B.M.E. 1947, Ohio State University
Weder, Margaret C. D.C.
Weeks, Christopher D.C.
B.S. 1952, Yale University
A.M. 1956, University of Michigan
Weeks, Margaret Josephine N.C.
B.S. 1952, Wake Forest College
Weeks, Ruby Williams Md.
Wefald, Harold E. Md.
A.B. 1950, University of New Mexico
Wegg, Richard Paul N.Y.
Wehrstedt, George Gustav Md.
B.S. 1936, Virginia Polytechnic Institute
Weidner, Richard George, Jr. Pa.
A.B. 1956, Muhlenberg College
Weil, Roselyn D.C.
Weilacher, Robert George D.C.
B.S 1957, Columbia University
Weinberg, Doris Lee D.C.
A.B. 1956, The George Washington University
Weinberger, Fanny Md.
Weiner, Carole D.C.

Weiner, Frank
A.B. 1953, Temple University N.J.
Weiner, Jack Ill.
Weiner, Jacob Murray Md.
Weiner, Melvyn David Mich.
Weiner, Robert Michael
B.S. in Ch.E. 1957, University of
Notre Dame Calif.
Weiner, Sidney
B.S 1940, College of the City of
New York
M.S. 1950, New York University N.Y.
Weiner, Victor D.C.
Weingarten, Harry
A.B. 1943, College of the City of
New York
A.M. 1945, Columbia University Va.
Weingarten, Herman Md.
Weingrad, Richard Herbert
B.S. 1950, The George Washington
University Md.
Weinhuff, Howard Earl
B.S. in B.A. 1948, University of
Arizona Ill.
Weinstein, Ira
B.S. 1949, Roosevelt University
M.S. 1952, University of Illinois Md.
Weinstein, Les J.
B.S. in M.E. 1956, University
of Pennsylvania Pa.
Weinstein, Louis
B.S. in E.E. 1955, University of
Pennsylvania Pa.
Weinstein, Paul Harold
B.S. 1955, Washington and Lee
University D.C.
Weinstein, Robert Earl
A.B. 1949, The George Washington
University D.C.
Weinstein, Roslyn Leibowitz D.C.
Weinstein, Samuel D.C.
Weinstraub, Deborah Smith D.C.
Weintraub, Irvin
A.B. 1950, Johns Hopkins University
M.L.S. 1951, Columbia University Md.
Weintraub, Stanley
B.S. 1947, College of the City of
New York D.C.
Weintraub, Stephen Peter
A.B. 1951, American University Va.
Weir, Kenneth Wynn
B.S. 1952, U. S. Naval Academy Va.
Weir, Phyllis Carson
A.B. 1955, American University Md.
Weir, William Andrew N.Y.
Weisberg, Paul
B.B.A. 1956, College of the City
of New York N.Y.
Weisberger, Florence D.C.
Weise, Ernest Lyman
B.S. 1938, M.S. 1950, The George
Washington University Md.
Weiser, Alan Lewis D.C.
Weisert, Conrad Henry Md.
Weisgerber, Georgiana Camille Md.
Weiss, Barbara Jane
A.B. 1957, Marywood College N.Y.
Weiss, Donald Allen
B.M.E. 1949, Cornell University Va.
Weiss, Naomi Ruth D.C.
Weiss, Ruby Ruth D.C.
Weiss, Theodore D.C.
Weiss, Wallace Hartman D.C.

Weissbrodt, Sylvia Esther
A.B. 1932, Hunter College Md.
Weissbrot, Paul
B.S. 1947, Rutgers University N.J.
Weissman, Joseph D.C.
Weissman, Ora
A.B. 1954, Hebrew University,
Israel Israel
Weissman, Samuel
B.C.E. 1955, New York University Va.
Weitzel, Fred Winfield Va.
Weitzner, Jay Kenneth
A.B. 1953, The George Washington
University N.Y.
Welbes, Marjorie Ellen Va.
Welch, Ann Christine Md.
Welch, Brenda D.C.
Welch, Paul Hesse
A.B. in Govt. 1957, The George
Washington University D.C.
Welch, Pierre Robert, Jr.
A.B. 1955, University of Michigan D.C.
Welch, Rolland Ernst D.C.
Welbon, Priscilla Ruth Va.
Weld, John Philip
B.S. 1957, East Carolina College N.C.
Welday, Robert James
B.S. 1942, Allegheny College Va.
Weldon, Albert Douglas Va.
Weller, Richard Walter Pa.
Wellington, Joseph Oliver
B.S. in F.S. 1956, Georgetown
University Va.
Wells, Celia Sue Va.
Wells, Charles Eric Va.
Wells, Eliot Chambers, Jr. Va.
Wells, Elisabeth Ann
B.S. 1948, Boston University Md.
Wells, Morris William
B.S. 1949, Miami University Md.
Wells, Nikita D.C.
Wells, Robert Oscar, Jr.
A.B. 1952, The George Washington
University D.C.
Wells, William Richard W.Va.
Welsh, John Albert D.C.
Welshans, Freel Gardner
A.B. 1937, Shepherd State College
A.M. in Ed. 1951, The George
Washington University W.Va.
Welt, Martin Allan
B.Ch.E. 1954, Clarkson Institute
of Technology
M.S. in Ch.E. 1955, Iowa State
College of Agriculture and
Mechanical Arts
M.S. in Nucl.E. 1957, Massachusetts
Institute of Technology N.Y.
Welty, John Milton
A.B. 1956, University of Minnesota D.C.
Wendt, William Robert
B.S. in M.E. and A.E. 1935,
University of Wisconsin Va.
Wenger, Jeffrey Joseph D.C.
Wenger, Paul Clement
B.S. 1957, Madison College Va.
Wenit, Robert Bruce D.C.
Wenninger, John Anthony
A.B. 1955, St. John's University Wis.
Wentworth, Ann D.C.
Wenzel, Donna Marie Md.
Weppelman, Robert Raymond Fla.
Werber, Deanna D.C.

Werber, Dennis Jules	D.C.
Werley, Harriet Helen B.S. 1948, University of California A.M. 1951, Columbia University	Md.
Wermter, Raymond B.S.E. 1949, University of Michigan	Md.
Werner, Alice Crane	N.J.
Werner, Martha May B.S. 1953, A.M. 1954, Columbia University	D.C.
Werner, Susan Chasmar	Pa.
Werner, Victor Emile	N.Y.
Wertheimer, Arnold Milton B.B.A. 1952, University of Pittsburgh	Md.
Wertlieb, Harvey Robert	D.C.
Wertlieb, Rita Lee	D.C.
Wesley, Leonarda Mortash	Va.
Wessbecher, Howard Otto B.S. 1951, Montana State University	Fla.
Wessel, James Louis	Calif.
Wessler, Ira Ely A.B. 1956, St. Lawrence University	N.Y.
West, Barbara Stewart	D.C.
West, Charles Henry B.S. in M.E. 1956, University of Wisconsin	Wis.
West, Donald Christian	D.C.
West, Ernest Paul	Md.
West, Hind Khoury B.S. 1949, McGill University	Md.
West, Richard Harvey	Md.
West, Ronald David	D.C.
West, Theresa K. A.B. 1940, Smith College	Va.
West, Thomas Reed	D.C.
Westberg, Bonnie Marie	Md.
Westbrook, Jerry Lee	N.J.
Westfall, Florent Franklin	Md.
Westlein, Patricia Rose	D.C.
Westmoreland, Milburn Neal	D.C.
Weston, Marion Sturdevant A.B. 1941, Syracuse University	Va.
Westrich, Carole Lee	Md.
Wetherington, Peggy Ann B.S. 1957, Gordon College	Va.
Wetzler, Gerald M.	N.Y.
Wexler, Hilda A.B. 1936, New York University A.M. 1953, The George Washington University	Md.
Wexler, Robert Eugene A.B. 1954, University of South Dakota	D.C.
Weycer, Albert Sheldon B.S. in Ch.E. 1956, University of Wisconsin	Va.
Whalen, Rita	D.C.
Whalen, Robert William A.B. 1948, Yale University	Conn.
Whaley, Mary Carolyn	Texas
Wharton, Russell	D.C.
Wheatley, James Holman A.B. 1956, University of Richmond	Va.
Wheatley, Robert Leon	D.C.
Wheeler, Carlos Victor B.S. in M.E. 1953, Case Institute of Technology	Va.
Wheeler, Elizabeth Danner B.B.A. 1953, Western Reserve University	Va.
Wheeler, Harry Lee	D.C.
Wheeler, Jerry Lee	D.C.
Wheeler, John Dixon	Va.
Wheeler, Larry Myron B.B.A. 1954, University of Georgia	G
Wheeler, Mary Starr A.B. 1916, Wellesley College LL.B. 1949, A.M. 1953, The George Washington University	Con
Wheeler, Wesley Russell	N.H.
Wheeler, Willis Boly	Va.
Wheeley, Carl Reid	D.C.
Wheeling, Donald Lee	D.C.
Wheeling, Joan Hartley	N.C.
Wheelus, Judith Gail	Mich.
Whetstone, Herbert Duane	Pa.
Whilden, Walter Homa, Jr.	Va.
Whillock, Carl Simpson B.S. in S.W. 1949, A.M. 1951, University of Arkansas	Ark.
Whipple, Byron Luis	Va.
Whipple, Elden Cole, Jr. B.S. 1955, Wheaton College	D.C.
Whisenhunt, Fred Smith, Jr. B.Ch.E. 1956, North Carolina State College	N.C.
Whitaker, Harriet E. Ph.B. 1924, Brown University	Md.
White, Allen Frederick	Md.
White, Alson Pharoah, Jr. B.S. in C.E. 1948, University of Arizona	Ariz.
White, Alta Gail B.F.A. 1938, University of Colorado	Colo.
White, Daniel Britton A.B. 1957, Dartmouth College	Mich.
White, David Marvin	Md.
White, Donald Olin A.B. 1955, University of Washington	Oreg.
White, Frances Rachel	Va.
White, Geneva, A. B.S. 1927, Carnegie Institute of Technology Ed.M. 1942, University of Pittsburgh	Va.
White, George Duesberry	D.C.
White, Harry C. B.S. 1940, U. S. Naval Academy	Va.
White, Jeanne Duane A.B. 1956, University of Colorado	Texas
White, Joan Linda B.S. 1949, University of Cincinnati	Va.
White, John Alton	Md.
White, John Leslie A.B. 1948, M.S. 1949, Kalamazoo College	Va.
White, Julius George	Md.
White, Leonard Allen	Md.
White, Paul Richard LL.B. 1934, Northeastern University	D.C.
White, Philip, Jr.	D.C.
White, Richard Warren A.B. 1950, Brown University	Va.
White, Ruth Clymer	Va.
White, Sarah Allen	Iowa
White, Thomas	Ill.
White, Wayne Day	Texas
Whitehead, Asa Carter, Jr.	Va.
Whitehead, James Samuel	N.C.
Whitehouse, Frances Edith	Va.
Whitenight, Daniel Newton	D.C.
Whitesell, William Abram	Va.
Whitham, Charles Lamont	Va.
Whiting, John Allen	Vt.
Whitley, Gerald Ernest	Va.
Whitley, Shirley Ann	N.C.
Whitlock, Jerry Dean	Va.

Whitmore, Mary Elizabeth	N.Y.
Whitmore, William Brice	Md.
Whitnack, Doris S. A.B. 1939, Radcliffe College	Va.
Whitney, Bonnie Anne	D.C.
Whitney, James Royal	Va.
Whitted, Charles Shepard B.S. 1948, Agricultural and Technical College of North Carolina	N.C.
Whittenmore, James Crawford A.B. 1957, Whitman College	Wash.
Whittenmore, Joan Margaret A.B. 1955, University of Massachusetts	D.C.
Whittet, Dorothy Hoyes	Va.
Whittington, Helen Overton Vierling A.B. 1939, Columbia University A.M. 1955, The George Washington University	Va.
Whitton, Suzy Brown	N.J.
Whitworth, Donald Philip	D.C.
Whorf, Allison Howes B.S. in E.E. 1952, University of Massachusetts	Md.
Whyte, Thomas Russell	Md.
Wichmann, William Arthur	Panama
Wichorek, John	Pa.
Wickstrand, Don Raymond B.S. 1955, Oregon College of Education	Oreg.
Wiemann, Margaret Olsen	Va.
Wiencek, Julian	D.C.
Weisman, Benjamin A.B. 1950, The George Washington University	Va.
Wiesman, Franklin Rafael	D.C.
Wiggins, Thomas Breden	Mich.
Wight, Arianna Randolph	D.C.
Wilbar, Mary Margaret A.B. 1946, The George Washington University	Md.
Wilber, Alan Whitney A.B. 1940, Albion College	Vt.
Wilber, Margie Robinson A.B. 1942, South Carolina State College	D.C.
Wilbern, John Parker A.B. 1940, University of Minnesota	Minn.
Wilborn, Dorothy Mae	Mo.
Wilcott, Elsie Louise	D.C.
Wilcox, Elizabeth	Md.
Wilcox, Richard Hoag B.S. in E.E. 1951, E.E. 1955, Lafayette College	Md.
Wilcox, Robert Lynn, Jr.	D.C.
Wild, Susan	D.C.
Wilde, Peter Van Dyke B.S. in Ch.E. 1956, Lehigh University	Va.
Wildemann, Mark Frederick B.S. 1956, University of Maryland	W.Va.
Wilder, Charles Stiles A.B. 1947, University of Texas	D.C.
Wilderson, Charles Rudolph B.S. in M.E. 1950, University of Kansas	Colo.
Wildman, Robert Aprill B.S. in C.E. 1937, The George Washington University	Md.
Wile, Frank Sloan A.B. 1949, Princeton University	Md.
Wilensky, Hugh Barnett	Mich.
Wiles, James Dixon	Va.
Wiles, Leila Marie	Md.
Wiley, Alan Roberts	D.C.
Wiley, Arthur Grumes, Jr. A.B. 1953, St. Lawrence University M.Pers.Adm. 1954, Syracuse University	Va.
Wiley, Earl Brooks A.B. in Govt. 1949, The George Washington University	Va.
Wiley, James Richard	Md.
Wilfond, Arthur E. B.S. 1956, Drexel Institute of Technology	Pa.
Wilfong, Beatrice L.	D.C.
Wilfong, James Dorman	W.Va.
Wilhelm, Helen Bertram	D.C.
Wilhelm, Jane Gilmer A.B. 1935, College of William and Mary A.M. 1937, Duke University	Va.
Wilhelm, Mary Ida	D.C.
Wilhelm, Robert Albert	Md.
Wilhide, Raymond Lynwood	Md.
Wilhite, Billy John B.S. 1957, Tennessee Institute of Technology	Tenn.
Wilken, William Jacob A.B. 1949, State University of Iowa	Md.
Wilkes, Faye A.B. 1951, Blue Mountain College	Miss.
Wilkes, Robert Macfie	Va.
Wilkie, Mary Hughes B.S. 1939, University of Michigan M.S. 1941, New York University	Md.
Wilkins, William Joseph B.S. 1956, American University	Md.
Wilkinson, Edward La Porte A.B. 1951, College of the Holy Cross LL.B. 1955, LL.M. 1956, Georgetown University	D.C.
Wilkinson, Herbert Swann	Md.
Wilkinson, Mary Bishop A.B. in Govt. 1948, The George Washington University	D.C.
Will, Fern Florence A.B. in Ed. 1942, The George Washington University	Md.
Willcox, Ralph Emerson	Md.
Willebeek-LeMair, Jacob	Maine
Willenz, June Adele B.S. 1945, A.M. 1947, University of Michigan	Md.
Willette, Helen Barbara A.B. 1941, Syracuse University	D.C.
Willey, Glendon Donnell II	Va.
Willey, John Bradford	Vt.
Willey, Larry Jackson A.B. 1957, Emory and Henry College	Va.
Willford, Milton Dwaine	Utah
Williams, Audrey Frances B.S. in Ed. 1926, University of Kansas	D.C.
Williams, Bryan McCaslin	D.C.
Williams, Dolores Salina	Md.
Williams, Doris B.S. in Bus.Ed. 1928, New York State College A.M. in Ed. 1947, The George Washington University	Md.
Williams Dorothy Martha	D.C.
Williams, Eli B.S. 1953, Drexel Institute of Technology	D.C.

Williams, Elizabeth Ann N.C.
Williams, Ellawitt Brewer D.C.
A.B. 1925, Arkansas State Teachers College
Williams, Elmore Charles Va.
Williams, Frances Ball Va.
Williams, Frances Wilmot Md.
Williams, Franklin Palmer, Jr. Va.
Williams, Galen Herschel D.C.
Williams, Ida Sutton D.C.
A.B. 1954, Smith College
Williams, Ira Edward D.C.
B.S. in M.E. 1952, Howard University
Williams, Jack Haven Pa.
A.B. 1956, Pennsylvania State University
Williams, Jacqueline Smith D.C.
B.S. 1952, D.C. Teachers College
Williams, James William Va.
B.S. in E.E. 1957, Vanderbilt University
Williams, Jimmie Duane D.C.
Williams, Joan Marie D.C.
Williams, John Ellsworth Fla.
Williams, John Haynes, Jr. Va.
B.S. 1951, D.C. Teachers College
Williams, John Helga, Jr. Md.
Williams, Katherine Jane Va.
A.B. 1955, Mary Washington College
Williams, Kathleen Zollman W.Va.
Williams, Lena Sarah D.C.
Williams, Linda Margaret D.C.
Williams, Luther Wallace N.C.
Williams, Mabel Elizabeth Va.
A.B. 1936, Randolph-Macon Woman's College
M.S. in L.S. 1948, University of Southern California
Williams, Marilyn H. D.C.
Williams, Melvin Clayton Pa.
Williams, Melvin Pearson Va.
B.E.E. 1957, Rensselaer Polytechnic Institute
Williams, Mervyn D.C.
Williams, Pearlena D.C.
B.S. 1956, D.C. Teachers College
Williams, Robert Edward Va.
Williams, Robert Erving Md.
B.S. 1945, U. S. Coast Guard Academy
N.E. 1953, Massachusetts Institute of Technology
Williams, Robert Lee Va.
B.S.E. 1952, A.M. 1955, West Virginia University
Williams, Robert Powell Mo.
Williams, Robert T. Va.
B.S. in E.E. 1951, Michigan College of Mining and Technology
Williams, Roger Va.
A.B. 1952, University of North Carolina
Williams, Shirley Verna Md.
A.B. 1952, Eastern Baptist College
Williams, Sidney Frye, Jr. Va.
B.M.E. 1949, Georgia Institute of Technology
Williams, Susan Kern D.C.
A.B. 1952, Wellesley College
Williams, Thelma Shaw Wash.
A.B. 1933, A.M. 1937, University of Washington

Williams, Thomas Lowel
B.M.E. 1956, Clarkson College of Technology
Williams, Weston Alberto
Williams, Wilfred Le Roy
B.S. 1955, Whitworth College
Williams, William H. R.
A.B. 1956, College of William and Mary
Williamson, Charles John
B.S. 1942, The George Washington University
Williamson, David, Jr.
A.B. 1956, Princeton University
Williamson, Harold Anthony
B.S. in M.E. 1957, University of Wisconsin
Williamson, Louise Basette
A.B. 1937, Virginia Union University
Williamson, Roger Lindsey
Willinger, Warren Jay
Willingham, Lewis Elbert
A.B. 1953, Bethany-Nazarene College
Willingmyre, Daniel Webster III
B.S. in E.E. 1932, University of Maryland
Willink, Elizabeth Wilhelmina
Master of Law 1936, University of Amsterdam
Willis, Bennett Talmadge
Willis, James Henry
Willis, James Millard
A.B. 1954, University of North Carolina
Willis, Louis Clayton
Willis, William Woodford
Willmore, Daniel Edward
A.B. in B.A. 1953, Idaho State College
Willoner, Ronald Andrew
A.B. 1955, University of Maryland
Willoughby, Olga Everett
Wills, Leonard Atlee
B.M.E. 1952, Georgia Institute of Technology
Wills, Richard Andrew, Jr.
Wills, Robert Wilbert
B.S. in M.E. 1951, West Virginia University
Willson, Leonard Alfred, Jr.
B.M.E. 1957, North Carolina State College
Wilner, Jane Bennett
Wilner, Natalie Myrna
Wilsey, George Frank, Jr.
B.S. 1953, Florida State University
Wilson, Allen
B.S. 1950, North Carolina College at Durham
Wilson, Bernadette
Wilson, Carol Wilma
Wilson, Diane Corinne
Wilson, Donald Franklin
A.B. 1948, A.M. 1949, University of California
Wilson, Ethel Christine
Wilson, Florence Morrow
A.B. 1930, Center College
Wilson, Frank Wesley
Wilson, Frederick Eugene
Wilson, Harold Kenneth
LL.B. 1955, University of Oklahoma
Wilson, Harriette Janet
A.B. 1956, Butler University

Wilson, Harry Edward, Jr.
B.S. 1954, Grove City College Pa.
Wilson, James Bruce Va.
Wilson, James Edward, Jr.
B.S. in Ch.E. 1953, University of
Maine Md.
Wilson, James Robert
A.B. 1947, Ursinus College
A.M. 1948, School of Advanced
International Studies
M.P.A. 1956, Harvard University D.C.
Wilson, John Hartey
B.S. and A.B. 1955, Shepherd State
College Va.
Wilson, Josephine Coleman Md.
Wilson, Judith Marie Va.
Wilson, Margaret Brown Md.
Wilson, Margaret Poisal D.C.
Wilson, Maryan Elizabeth D.C.
Wilson, Maryjane
A.B. 1953, Catholic University of
America D.C.
Wilson, Mercedes S.
B.S. 1932, Kansas State College D.C.
Wilson, Miriam Janette Ill.
Wilson, Paul Grier, Jr.
A.B. 1950, University of Maryland Md.
Wilson, Raymond Boyd
A.B. in Govt. 1956, The George
Washington University Md.
Wilson, Richard Earl
B.S. in E.E. 1956, Washington
University Va.
Wilson, Richard Eugene
B.S. 1951, Queens College Va.
Wilson, Richard Martin D.C.
Wilson, Robert Marion Md.
Wilson, Robert William
A.B. 1951, West Virginia University W.Va.
Wilson, Roy Leon, Jr.
B.S. 1943, Mississippi State College Va.
Wilson, Susan Neuberger
A.B. 1951, Vassar College D.C.
Wilson, Walter James
B.S. 1954, University of Maryland Va.
Wilson, William Wayne
A.B. 1956, Northwestern University Texas
Wilt, John B. M. Pa.
Windheim, Aaron Gottlieb
A.B. 1956, University of Connecticut D.C.
Windsor, David Warren Ga.
Wine, Hilda K.
B.S. 1939, Ed.M. 1947, University of
Maryland D.C.
Winegard, Marcia Leslie
A.B. 1957, University of Massachusetts D.C.
Winfree, Douglas Woodson, Jr.
B.S. 1941, Georgia Institute of
Technology Fla.
Wing, Roswell Barnett
A.B. 1949, Harvard University
A.M. 1950, School of Advanced
International Studies Md.
Wing, Wailey Lake D.C.
Winger, Audrey Doris
A.B. 1943, University of Wisconsin Wis.
Winget, Myron Jolly, Jr.
B.S. 1956, University of Maryland D.C.
Wingfield, Joseph Daniel
B.S. in I.E. 1951, Virginia Polytechnic
Institute Va.
Wingo, James Scott D.C.
Wingo, Walter Scott D.C.

Winkel, Joanne Helen Va.
Winkel, Paul Patton
B.S. 1928, Purdue University Va.
Winkel, Sidney Susan Va.
Winkler, Ann Madeline D.C.
Winkler, George Edward Md.
Winkler, Montgomery King
A.B. 1954, Whittier College D.C.
Winkler, Virginia MacDade Va.
Winn, Becky Nell Va.
Winslett, Georgine Wash.
Winston, James Michael D.C.
Winston, Joan Lee
A.B. 1952, Barnard College D.C.
Winter, Barbara Anne
B.S. 1956, Kansas State College Va.
Winter, William Thomas
B.S. in E.E. 1956, University of
Illinois Wis.
Winterbourne, Rita Eronimous
B.S. in Ed. 1950, New York State
Teachers College N.Y.
Winters, Christina Va.
Winters, Ruth Dee Va.
Winters, William Harvey Va.
Wirarat, Amporn Thailand
Wirtz, George Henry
B.S. 1953, M.S. 1956, University of
Wisconsin Wis.
Wise, Robert Wayne
B.S. 1956, McPherson College Kans.
Wise, William Brooks Md.
Wise, William Simpson D.C.
Wisecarver, Betty Marie
A.B. 1957, Mary Washington College D.C.
Wiseman, Charles Henry
B.S. 1952, U. S. Naval Academy N.Y.
Wiseman, Morris
B.S. in Ch.E. 1955, Drexel Institute of
Technology Md.
Wiser, C. Lawrence
B.S. 1952, University of Maryland Md.
Wisler, Ellis Bowman, Jr. Md.
Wisniewski, Kathleen Ratcliffe
A.B. 1946, Mary Washington College Va.
Wissler, Mary Alice
A.B. 1946, Beloit College Va.
Wissman, Robert Gray
B.S. 1952, University of Maryland Kans.
Withers, James Clyde
B.S. 1954, American University Va.
Withers, Larry Kennon D.C.
Withington, Paul Douglas
A.B. 1956, Dartmouth College Pa.
Witkin, Michael Jay D.C.
Witten, Mary Lindsay
A.B. 1945, North Carolina College
at Durham Va.
Wittenberg, William Henry
B.S. 1952, New York State Teachers
College, Oswego
A.M. 1955, Queens College D.C.
Wittle, Kenneth Earl
A.B. 1956, Elizabethtown College Pa.
Wittwer, Marion Samuel
B.S. 1955, Brigham Young University D.C.
Witz, Donald Lewis Va.
Wogan, Claudia Lynette
A.B. 1957, American University Va.
Wogan, Dolores Steinheimer Calif.
Wohl, Paul
A.B. in Govt. 1954, The George
Washington University N.Y.

Wohlers, Jane Arden N.Y.
Wojcik, Frank Ralph Md.
Wolf, Elaine Ann Va.
Wolf, Fred Fuhrman D.C.
LL.B. 1952, Harvard University
Wolf, Fritz Hermann D.C.
Wolf, John Barry Va.
Wolf, Julian Mitchell Mass.
Wolf, Ronald Wenger Pa.
A.B. 1951, Lebanon Valley College
Wolf, Warner William D.C.
Wolfe, Alan David N.Y.
B.S. 1952, Queens College
M.S. 1956, Massachusetts Institute of Technology
Wolfe, Allen Robert D.C.
Wolfe, Irene Ruth D.C.
Wolff, Marion Freyes D.C.
B.S. 1955, Johns Hopkins University
Wolffe, Franklin David Pa.
B.S. in Ch.E. 1954, University of Maryland
Wolfgang, John Leonard, Jr. Va.
Wolfinger, Joseph David D.C.
Wolfley, Earl Scott Wyo.
B.S. 1952, Brigham Young University
Wolfson, Nicholas Karl N.Y.
A.B. 1953, Columbia University
LL.B. 1956, Harvard University
Wolicki, Wilma D.C.
Wolin, Beverly D.C.
Wolk, Martin Md.
B.S. 1957, The George Washington University
Wolle, Helen Osbey Va.
A.B. 1940, Morningside College
Woloshin, Aaron D.C.
B.S. 1957 College of the City of New York
Wolph, William Richard D.C.
LL.B. 1957, University of Nebraska
Wolz, August Richard Md.
B.S. in C.E. 1951, Johns Hopkins University
Womack, Sarah Grace D.C.
B.S. 1952, A.M. 1953, University of Alabama
Womble, Miriam Jeannette D.C.
B.S. 1950, Virginia Union University
Womble, William Alton D.C.
B.S. 1941, Agricultural and Technical College of North Carolina
A.B. 1947, Laval University, Canada
Womeldorf, George Raymond, Jr. D.C.
A.B. 1952, The George Waashington University
B.D. 1955, Union Theological Seminary
Wondrack, Miriam Judith D.C.
Wong, Alice Lee D.C.
Wong, Edsel A. Panama
Wong, Eugene D.C.
Wong, George D.C.
Wong, James Aubrey D.C.
B.M.E. 1951, The George Washington University
Wong, Ronald Junior D.C.
B.S. 1952, Philadelphia College of Pharmacy
Woo, Choong Hum Va.
A.B. 1955, North Central College
Wood, Charles Bryant Va.
B.S. 1951, American University
Wood, Cora B. Md.
Wood, Dick Raymond D.C.
A.B. 1953, New York State College for Teachers
Wood, Douglas Kellogg Conn.
Wood, Elisabeth Jean England
Wood, Frances Coles D.C.
B.S. 1953, Virginia State College
Wood, Hubert Dean Md.
Wood, Inez Gregory D.C.
B.S. 1954, D. C. Teachers College
Wood, John Birkhead D.C.
Wood, John Palmer D.C.
Wood, Joseph Robert N.J.
B.S. 1935, Rhode Island State College
Wood, Lawrence W. D.C.
Wood, Mary Meyer Va.
A.B. 1941, Wesleyan College
Wood, Patti Greathouse Va.
Wood, Robert Jerome Va.
A.B. 1940, St. Mary's Seminary
Wood, Robert Lukens, Jr. Md.
B.S. 1955, Sophia University, Tokyo, Japan
Wood, Robert Shoecraft Md.
Wood, Sidney Ezell D.C.
A.B. 1957, Mercer University
Wood, Warren Arthur, Jr. Mich.
B.S. 1957, Hillsdale College
Wood, William Ronald Md.
A.B. 1952, University of Maryland
Woodall, Jimmy Dale Ga.
Woodburn, Mary Lynn Md.
Woodcock, Carlton Alson Md.
Woodend, James Richard Md.
Woodfield, Roland Lawton D.C.
B.S. in C.E. 1951, Duke University
Woodford, Fay Clark Md.
Woodruff, Willard Henry Va.
Woods, Jewell Humes D.C.
B.S. 1954, D. C. Teachers College
Woods, Lenore Gordon Va.
Woods, Thomas Alfred D.C.
B.S. in C.E. 1931, Armour Institute of Technology
Woodside, Kenneth Hall Mass.
Woodson, John Stanton D.C.
Woodtke, Carol Ann Conn.
Woodward, Charles MacCubbin Md.
B.S. in C.E. 1951, Virginia Military Institute
Woodward, Kenneth Emerson Va.
B.M.E. 1949, The George Washington University
M.S. 1953, University of Maryland
Woodward, Lewis K., Jr. Va.
A.B. 1927, Western Maryland College
M.D. 1935, University of Maryland
Woodward, Ronald Dean Md.
Woodworth, George Burdette Minn.
Woodworth, Howard M. Md.
B.S. 1942, University of Minnesota
Woody, Robert Matthew Md.
Wooldridge, James Moore D.C.
A.B. 1943, University of Kentucky
Woolridge, Guy Carlton Va.
Woolf, Bertie Harold Reginald D.C.
A.B. 1955, A.M. 1957, The George Washington University
Woolley, Doris Estes Mass.
Woolley, Suzanne Elizabeth D.C.
Wools, James Va.
A.B. 1953, Virginia Military Institute

Wooster, Cynthia Joanne A.B. 1956, University of Vermont	Mass.
Wootton, Charles Greenwood A.B. 1947, Columbia University	Md.
Worley, Doris Louise	D.C.
Worley, Joseph Francis B.S. 1955, The George Washington University	D.C.
Worm, Ruth B.S. in N.E. 1955, Cornell University School of Nursing	N.Y.
Worrell, Wayne Clair	Md.
Worthington, Frank Xavier	Va.
Worthington, Raymond Leroy B.S. 1941, University of Maryland	Md.
Woy, Theodore Charles	Calif.
Wray, Robert Lee	Va.
Wren, Marvin Robert A.B. 1951, Catholic University of America	D.C.
Wrenn, Bernard Ray A.B. 1952, West Virginia Institute of Technology A.M. 1954, Kent State University	Va.
Wrenn, George Sibert, Jr.	Md.
Wrenn, William Richard B.S. 1953, High Point College	Va.
Wriggle, Gordon Wayne	Md.
Wright, Dellie, Jr.	Va.
Wright, Doane Norman	D.C.
Wright, Doris Carolyn	D.C.
Wright, Edward Earl A.B. 1951, Tulane University LL.B. 1957, Yale University	La.
Wright, Emma Reed B.S. 1949, Tennessee State University A.M. 1954, New York University	Ga.
Wright, Harlow	Va.
Wright, Jeannette Tornow A.B. 1956, The George Washington University	Wis.
Wright, Joanne May	Va.
Wright, John Thurston, Jr.	D.C.
Wright, Natalie Martha	Va.
Wright, Peter	Va.
Wright, Robert Gerald A.B. 1949, Loras College	Ill.
Wright, Ross Wallace	Tenn.
Wright, Ruby Isabel	N.C.
Wright, Talbot M.	Md.
Wright, Thomas Evan	Kans.
Wright, Thomas George	Va.
Wright, Ward Drury	D.C.
Wright, Walter Thomas	Md.
Wright, Walter Vance B.S. 1956, Pennsylvania State University	Va.
Wright, William Joseph, Jr.	Md.
Wrubel, Annlouise A.B. 1954, Mount Holyoke College	Conn.
Wu, David Deh-Wei	D.C.
Wu, Josette	W.Va.
Wuest, William Russell	Ohio
Wulfsberg, Einar Theodore A.B. 1933, Luther College M.S. 1937, University of Minnesota	Va.
Wunsch, Jan Maria LL.D. 1930, Charles University of Prague, Czechoslovakia	D.C.
Wunsch, Zdenka Vera	D.C.
Wyczawski, Richard Walter B.S. 1940, Indiana University	Ind.
Wydro, John William A.B. in Govt. 1955, The George Washington University	Md.
Wyllie, Douglas Ramsay A.B. 1949, Michigan State University	Mich.
Wyman, Alvin Edwin	Mass.
Wyman, Lawrence Edward	Va.
Wysong, Hazel Gallien A.B. 1948, Glenville College	Va.
Wywal, Felix Benard	R.I.

X

Xaivaividhya, Kitti	Va.
Xepapas, Alice A.	D.C.
Xoomsai, Yibbhan	Thailand

Y

Yachnis, Michael B.S.E. 1943, Greek Military Academy B.S.E. 1951, Technical Institute of Athens M.S. in Eng. 1956, The George Washington University	D.C.
Yagi, Dickson Kazuo	Hawaii
Yakscoe, Andrew Joseph	Pa.
Yancey, Quillian S. B.S. 1949, Florida Southern College	Fla.
Yanchulis, Walter Francis	D.C.
Yane, Stephen William	Va.
Yanes, Luis Manuel	Venezuela
Yaney, Alexander, Jr. B.S. 1938, University of Scranton	Va.
Yang, Stephen William	Va.
Yang, Wonjik	Korea
Yanowsky, Nicholas B.S. 1949, A.M. 1950, University of Pennsylvania	Va.
Yartzoff, Andrew George B.S. 1954, College of the Pacific M.S. 1956, Stanford University	Calif.
Yashko, Paul A.B. 1950, University of Utah	Md.
Yater, Wallace Mason	D.C.
Yates, Hildred Frances	D.C.
Yates, Nellie Lewis	D.C.
Yates, Paul Best II A.B. and B.S. 1951, Ohio State University	Va.
Yates, Paulette Marie A.B. 1956, College of William and Mary	Va.
Yates, Ronald Lee B.S. 1955, Iowa State College	Iowa
Yates, Sam Lincoln A.B. 1939, Wayne State University A.M. 1940, University of Michigan	Calif.
Yavner, Ruth M.	N.Y.
Yazdanpanah, Kambiz	Iran
Yazigi, Alberto Suleman	Brazil
Yeager, Arthur George B.E.E. 1956, University of Florida	Fla.
Yeaman, Max Wilfred A.B. 1954, University of California	D.C.
Yeary, William Carl A.B. 1957, University of Texas	Va.
Yeatman, Francis Xavier B.S. in B.A. 1949, Georgetown University	Md.
Yee, Harry Y. P.	Mich.
Yee, James Moon B.S. 1956, University of Maryland	D.C.
Yee, Jason	Calif.
Yee, Phyllis A.B. 1957, University of California at Los Angeles	D.C.
Yee, Ronald Kim	D.C.

Yeh, Woo D.C.
B.S. 1934, Chiao-Tung University, China
Yehle, Francoise Brandt Va.
B.S. 1954, University of Wisconsin
Yehle, William Nelson Va.
B.S. in C.E. 1951, University of Denver
Yelton, Raymond, Jr. Ky.
Yen, Paul Ming-Hsing Formosa
B.S. 1955, University of Redlands
Yennie, Dorothy Irene D.C.
B.S. 1941, Minnesota State Teachers College, Winona
A.M. 1949, University of Minnesota
Yesson, Charles Joseph Pa.
B.S. 1950, Pennsylvania State Teachers College, Bloomsburg
Yevzeroff, David Allan Md.
Yim, Antoinette Hawaii
Yockelson, Allan Eric D.C.
Yodice, John Salvatore N.Y.
A.B. 1954, Brooklyn College
Yokum, Otis Manherz Md.
Yore, Robert Curtis Va.
Yoritomo, Kent Toshio Va.
B.S. 1951, University of Colorado
York, E. T., Jr. Ala.
B.S. 1942, M.S. 1946, Alabama Polytechnic Institute
Ph.D. 1949, Cornell University
York, Jack Va.
A.B. in Govt. 1953, The George Washington University
York, Leon Fred Md.
A.B. 1927, Taylor University
Yorkdale, Paul Harrison Va.
Yorkdale, Robert Craig Md.
Yoshizawa, Janyce Tamie Hawaii
Yost, Herbert Pentoney Va.
B.S. 1951, West Virginia University
Youman, Carl Alexander D.C.
Young, Bobby Gene Md.
B.S. 1951, Southeast Missouri State College
Young, Charity Quander D.C.
Young, Clington Volney Va.
B.S. in M.E. 1934, Kansas State College of Agriculture and Applied Science
Young, Earle Wilson, Jr. Md.
Young, Elmer Milton Va.
Young, F. Patricia Ind.
Young, Gail Pendleton D.C.
Young, George Charles Md.
B.S. in Ch.E. 1951, Missouri School of Mines
Young, Ira Sanders N.Y.
A.B. 1955, Lafayette College
Young, Jacqueline S. Calif.
Young, James Allen Ohio
A.B. 1954, Ohio Wesleyan University
Young, James Nelson Va.
B.S. 1951, Virginia Polytechnic Institute
Young, John William, Jr. Va.
B.S. 1955, M.S. 1957, Virginia Polytechnic Institute
Young, Joseph Albert Maine
Young, Juanita Louise N.J.
A.B. 1956, Syracuse University
Young, Marguerite Louise Md.
A.B. 1942, A.M. 1943, University of Wisconsin
Young, Mary Catherine D.C.
Young, Melinda Ann N.J.
Young, Mildred Evelyn D.C.
B.E. 1936, University of Wisconsin
Young, Patricia Miller Va.
Young, Ray Markee Ind.
Young, Robert Wendell D.C.
Young, Roger Lawrence Va.
Young, Truman Richards Calif.
LL.B. 1932, The George Washington University
Young, William Harold N.Y.
B.S. 1956, Webb Institute of Naval Architecture
Young, William Karl, Jr. Md.
B.S. 1956, University of Maryland
Young, William Mitchell D.C.
Younger, Beverly June Md.
B.S. 1957, University of Maryland
Youngs, Maynard Lee Mich.
A.B. 1954, Kalamazoo College
Younker, Leura Md.
A.B. in Ed. 1955, The George Washington University
Youssef, Ahmed Mahmoud Md.
B.S.E. 1950, University of Cairo, Egypt
Youtz, Doris Bockmann N.Y.
A.B. 1941, Wellesley College
Yovin, Louis Andre Va.
Yu, Betty Anne D.C.
Yu, David Siu-Chi D.C.
Yuan, Pei-Shuan China
A.B. 1957, National Wu-Hun University, China
Yuen, David Md.
Yun, Suk Heun D.C.
A.B. 1949, Seoul National University, Korea
Yung, Paul Tse-Hwa D.C.
A.B. 1952, Carroll College
Yuppa, Carmen Giovonni Calif.
Yurow, John Jesse Md.
A.B. 1953, The George Washington University
Yuter, Linda Elaine Md.
Yuthasastrkosol, Pradiyat Thailand
B.S. 1945, Royal Thai Naval Academy
B.S. in M.E. 1956, Carnegie Institute of Technology
Yutzy, Carl Vernon Pa.

Z

Zabijaka, Valentine N.Y.
Zabriskie, Howard Franklin Md.
Zabriskie, John Edmund Va.
A.B. 1955, Middlebury College
Zackrison, Harry Bertil Va.
Zahn, Mallory Hufty Va.
B.S. 1934, Mary Washington College
Zahrndt, Helen Martha S.D.
Zaleski, Carl Eugene Pa.
Zall, Resa Beverly Md.
Zamanakos, Arthur Stergios Va.
A.B. 1950, Boston University
Zamor, Salnave D.C.
Zamoyska, Anna Margaret Md.
Zander, Karla Md.
Zandle, Gerald Lewis D.C.
A.B. 1949, Brooklyn College
Zane, Craig K. D.C.
A.B. 1953, Harvard University
M.P.A. 1956, Syracuse University

Zannoni, Vincent Gerald N.Y.
B.S. 1951, College of the City of New York
M.S. 1956, The George Washington University
Zapolski, Edward J. N.Y.
Zarin, Linda Ann D.C.
Zarin, Neil Arthur D.C.
Zartman, Eugene Rufus Va.
B.S. 1956, Bucknell University
Zassenhaus, Hans Walter Eugene Bolivia
Zauner, Joseph Frederick, Jr. Md.
B.M.E. 1949, Catholic University of America
Zavitssanos, Demetrios John D.C.
Zavu, Costache Rumania
Zawacki, William Dee Va.
Zdynak, Julia D.C.
Zeiger, Leon D.C.
Zekas, Edward J. D.C.
A.B. 1951, Temple University
LL.B. 1957, Georgetown University
Zekas, Elenore D.C.
Zekas, Margaret D.C.
Zell, Mary Jill Ohio
Zelles, Gary Warren N.J.
A.B. 1957, Rutgers University
Zenith, James Earl Va.
B.B.A. 1949, University of Cincinnati
Zeserman, Helen Louise D.C.
Zieg, Robert Lloyd Va.
B.I.E. 1956, General Motors Institute
Ziegler, Richard T. Va.
Zielke, Evelyn Hildegard Wis.
Ziemba, John Stanley D.C.
Ziems, Robert Frederick Mich.
B.S. in C.E. 1951, Michigan College of Mining and Technology
Zier, John Philip Md.
Zietz, Eli Md.
B.S. in Ed. 1951, University of Nebraska
Zilber, Sylvia Lee Md.
Zilliacus, Stephen D.C.
Zimmer, Andrew Peter N.M.
A.B. 1951, Harvard University
Zimmer, Joseph Philip, Jr. Md.
A.B. 1954, Fordham University
Zimmerman, Ernest Frederick D.C.
B.S. in Phar. 1956, The George Washington University
Zimmerman, Esther Janice D.C.
Zimmerman, Jack Pearce Kans.
B.S. 1948, U. S. Naval Academy
Zimmerman, Peggy June Md.
Zinn, Donald Edward Pa.
B.S. in M.E. 1954, Pennsylvania State University
Zipern, Martin Samuel N.Y.
Zirkle, David Homer D.C.
Zirpoli, Lewis V. N.Y.
B.Ch.E. 1955, Brooklyn Polytechnic Institute
Zoch, Richmond Tucker Md.
A.B. 1931, A.M. 1933, The George Washington University
Zolly, Mark W. D.C.
Zolyak, John Pa.
A.B. 1953, The George Washington University
Zorolow, Audrey Martin Mass.
Zubkoff, Paul L. N.Y.
A.B. 1956, University of Buffalo
Zucker, Sandra Gail Va.
Zugay, Vincent Joseph Pa.
B.S. 1955, Pennsylvania State Teachers College, Indiana
Zugel, Francis Kopp Md.
B.S. in Eng. 1957, The George Washington University
Zuke, Walter Va.
B.S. 1938, Albright College
A.M. in Ed. 1951, The George Washington University
Zuker, Roger Kenneth D.C.
Zumoff, Bertram D.C.
Zurad, Bruno Hyacinth Ill.
Zuraw, Edward V. Pa.
Zurawski, Lucia R. N.Y.
Zurlinden, Anne Marie D.C.
Zuromski, Barbara Joan D.C.
Zuzik, Michall Benedict Pa.
A.B. 1952, University of Pittsburgh
A.M. 1957, Georgetown University
Zvares, Sherry Eve D.C.
Zweben, Murray N.Y.
B.S. 1952, M.S. 1953, New York State Teachers College, Albany
Zwerner, David Eric Va.

SUMMARY OF REGISTRATION

1957–58

Junior College

	Men	*Women*	*Total*
Freshmen	520	448	968
Sophomores	625	495	1,120
Total	1,145	943	2,088

Columbian College

Juniors	140	155	295
Seniors	226	228	454
Candidates, degree of Master of Arts	205	117	322
Candidates, degree of Master of Science	96	25	121
Unclassified	19	7	26
Total	686	532	1,218

The Graduate Council

Candidates for the degree of Doctor of Philosophy	127	23	150

The School of Medicine

First Year	98	6	104
Second Year	90	10	100
Third Year	87	3	90
Fourth Year	85	4	89
Total	360	23	383

The Law School

First Year	531	41	572
Second Year	325	24	349
Third Year	325	14	339
Candidates, degree of Master of Laws	54	3	57
Candidates, degree of Master of Comparative Law	5	2	7
Candidates, degree of Master of Comparative Law (American Practice)	8	—	8
Candidates, degree of Doctor of Juridical Science	4	—	4
Unclassified	32	1	33
Total	1,284	85	1,369

THE SCHOOL OF ENGINEERING

	Men	Women	Total
Freshmen	264	4	268
Sophomores	275	—	275
Juniors	173	1	174
Seniors	149	1	150
Candidates, degree of Master of Science in Engineering	128	—	128
Candidates, degree of Master of Engineering Administration	421	1	422
Unclassified	21	1	22
Total	1,431	8	1,439

THE SCHOOL OF PHARMACY

	Men	Women	Total
Juniors	18	—	18
Seniors	17	—	17
Unclassified	1	—	1
Total	36	—	36

THE SCHOOL OF EDUCATION

	Men	Women	Total
Juniors	21	58	79
Seniors	43	90	133
Candidates, degree of Master of Arts	169	244	413
Candidates, Advanced Professional Certificate	26	35	61
Candidates, degree of Doctor of Education	53	22	75
Unclassified	71	106	177
Total	383	555	938

THE SCHOOL OF GOVERNMENT

	Men	Women	Total
Juniors	85	30	115
Seniors	201	47	248
Candidates, degree of Master of Arts in Government	184	35	219
Candidates, degree of Master of Arts in Personnel Administration	8	1	9
Candidates, degree of Master of Arts in Public Administration	23	1	24
Candidates, degree of Master of Business Administration	156	1	157
Candidates, degree of Doctor of Business Administration	14	—	14
Unclassified	8	1	9
Total	679	118	797

THE COLLEGE OF GENERAL STUDIES

Candidates, degree of Associate in Arts	17	4	21
Candidates, degree of Bachelor of Arts	81	6	87
Candidates, degree of Bachelor of Science in Cartography	4	—	4
Candidates for Master of Arts	22	3	25
Unclassified	2	—	2
Total	126	13	139

THE DIVISION OF UNIVERSITY STUDENTS

University students	2,098	1,689	3,787

THE DIVISION OF SPECIAL STUDENTS

Special Students	589	148	737

SUMMARY

Students Registered, Academic Year 1957–58	13,568	5,538	19,106
Students Registered, Summer Sessions 1957	2,562	1,200	3,762
Total Registration 1957–58	16,130	6,738	22,868
Duplicate Registrations	7,186	2,601	9,787
Total Number of Students Registered 1957–58*	8,944	4,137	13,081

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* The above number does not include:

The College of General Studies (Off Campus)	
Credit Courses	4,882
Noncredit Courses	403
Total	5,285

TEACHING STAFF 1957–58

Professors Emeritus	35
Professors	103
Research Professors	2
Adjunct Professors	4
Professorial Lecturers	86
Clinical Professors	20
Associate Professors	71
Associate Clinical Professors	17
Associate Professorial Lecturers	13
Associates in the School of Medicine	139
Assistant Professors	64
Assistant Clinical Professors	60
Assistant Research Professors	7
Lecturers	118
Instructors	25
Clinical Instructors	162
Associates	58
Fellows	54
Graduate Teaching Assistants	16
Technicians	14
TOTAL	1,048

DEGREES CONFERRED

1957–58

Associate in Arts (College of General Studies)	43
Associate in Arts (Junior College)	436
Bachelor of Arts	255
Bachelor of Arts (College of General Studies)	50
Bachelor of Arts in Education	51
Bachelor of Arts in Government	139
Bachelor of Civil Engineering	11
Bachelor of Electrical Engineering	32
Bachelor of Laws	174
Bachelor of Laws (National University)	3
Bachelor of Mechanical Engineering	28
Bachelor of Science	36
Bachelor of Science in Engineering	20
Bachelor of Science in Home Economics	7
Bachelor of Science in Pharmacy	18
Bachelor of Science in Physical Education	20
Doctor of Business Administration	2
Doctor of Education	3
Doctor of Juridical Science	2
Doctor of Medicine	90
Doctor of Philosophy	26
Juris Doctor	50
Master of Arts	44
Master of Arts (College of General Studies)	26
Master of Arts in Education	70
Master of Arts in Government	28
Master of Arts in Personnel Administration	7
Master of Arts in Public Administration	9
Master of Business Administration	78
Master of Comparative Law	3
Master of Comparative Law (American Practice)	4
Master of Engineering Administration	22
Master of Laws	19
Master of Laws (National University)	1
Master of Science	32
	1,839

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

UNITED STATES, TERRITORIES, AND POSSESSIONS

Alabama	38	Georgia	56
Arizona	13	Idaho	28
Arkansas	31	Illinois	148
California	149	Indiana	69
Colorado	27	Iowa	41
Connecticut	75	Kansas	56
Delaware	15	Kentucky	34
District of Columbia	3,788	Louisiana	25
Florida	125	Maine	29

Maryland	2,387	Pennsylvania	469
Massachusetts	168	Rhode Island	21
Michigan	92	South Carolina	37
Minnesota	49	South Dakota	28
Mississippi	23	Tennessee	50
Missouri	66	Texas	93
Montana	8	Utah	39
Nebraska	34	Vermont	11
Nevada	19	Virginia	3,123
New Hampshire	17	Washington	44
New Jersey	214	West Virginia	99
New Mexico	27	Wisconsin	48
New York	476	Wyoming	12
North Carolina	118	Alaska	2
North Dakota	12	Canal Zone	5
Ohio	143	Guam	1
Oklahoma	43	Hawaii	28
Oregon	21	Puerto Rico	12

FOREIGN COUNTRIES

Afghanistan	3	Jordan	1
Argentina	1	Korea	26
Bolivia	4	Latvia	2
Brazil	14	Lebanon	1
British West Indies	2	Liberia	1
Burma	2	Libya	2
Canada	9	Malaya	1
Ceylon	1	Mexico	2
China	13	Netherlands	1
Colombia	1	Netherlands Antilles	1
Cuba	10	Nicaragua	3
Ecuador	3	Norway	3
Egypt	5	Pakistan	4
England	6	Panama	8
Ethiopia	3	Paraguay	1
Finland	3	Peru	5
Formosa	3	Philippines	14
France	4	Poland	1
Germany	3	Portugal	1
Greece	7	Rumania	1
Haiti	1	Spain	3
Honduras	2	Sweden	2
Hong Kong	2	Switzerland	5
India	12	Syria	4
Indonesia	4	Thailand	17
Iran	22	Tunisia	1
Iraq	4	Turkey	15
Israel	10	Venezuela	3
Italy	6	Vietnam	5
Japan	7	Yugoslavia	1

ALUMNI AND AFFILIATED ASSOCIATIONS

THE GENERAL ALUMNI ASSOCIATION

The objects of this Association are to unite the graduates in closer sympathy and to promote the general welfare of the University. The following persons are eligible for *active* membership: graduates of any college, school, or division of the University; holders of honorary degrees from the University; and members of the Board of Trustees and of the Faculty of the University. Any person who has matriculated, who has been in regular attendance for one year, and who has left the University in good standing, is eligible for *associate* membership.

The Office of Alumni Relations is situated at 2000 H Street NW., Washington 6, D. C. Alumni are urged to keep the office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

1958–59

GOVERNING BOARD

President.—Otto W. Schoenfelder, A.B. in Govt. 1933, LL.B. 1942; Tax Court of the United States, Washington, D. C.

Vice Presidents:

Columbian College.—James C. Van Story, Jr., A.B. 1948, A.M. 1949; 1145 19th Street NW., Washington, D. C.

Graduate Council.—George W. Irving, Jr., B.S. 1933, A.M. 1935, Ph.D. 1939; 4836 Langdrum Lane, Chevy Chase, Md.

School of Medicine.—Donald Harper Leeper, Jr., M.D. 1938 (B.S. 1932, Davidson College); 1835 I Street NW., Washington, D. C.

Law School.—Elizabeth Strachan Freret, LL.B. 1950 (A.B. 1942, Tulane University of Louisiana); 1162 W. Wakefield Drive, Alexandria, Va.

School of Engineering.—Alfred Brox Moe, A.B. 1949, B.C.E. 1953; 130 S. Columbus Street, Arlington, Va.

School of Pharmacy.—F. Royce Franzoni, B.S. in Phar. 1936; 3508 N. Abingdon Street, Arlington, Va.

School of Education.—Elsie Green, A.B. 1914, A.M. 1928; 3151 Tennyson Street NW., Washington, D. C.

School of Government.—Roy B. Eastin, A.B. 1942, A.M. 1945 (Ph.D. 1953, American University); Government Printing Office, Washington, D. C.

reasurer.—L. Jackson Embrey, A.B. 1937, LL.B. 1949, LL.M. 1949; 647 22d Street S., Arlington, Va.

Executive Secretary.—Mary Dow, A.B. 1953; 4734 N. 20th Street, Arlington, Va.

THE GEORGE WASHINGTON UNIVERSITY MEDICAL SOCIETY

The George Washington University Medical Society, the organization of graduates of the School of Medicine, was established in 1905 and since 1926 has been affiliated with the General Alumni Association. The objects of the Society, as stated in the constitution, are "The promotion of the science and art of medicine and the welfare of the School of Medicine."

1958–59

President.—Helen Gladys Kain, B.S. 1917, M.D. 1923; 1801 I Street NW., Washington, D. C.

President Elect.—Frederick Young Donn, M.D. 1941; 1835 I Street, NW., Washington, D. C.

First Vice President.—Edward Egner Ferguson, M.D. 1936; 1835 I Street NW., Washington, D. C.

Second Vice President.—Glen Pincock, M.D. 1934; 3604 Cardiff Road, Chevy Chase, Md.

Secretary.—Marcus P. Goumas, A.B. 1938, M.D. 1942; 1106 W. Great Falls Street, Falls Church, Va.

Treasurer.—Naomi Marilyn Kanof, A.B. 1931, M.D. 1934; 1150 Connecticut Avenue NW., Washington, D. C.

Council:

Robert Rice Montgomery, M.D. 1943 (A.B. 1945, Lafayette College); 8314 Carey Lane, Silver Spring, Md.

Richard Fischer, B.S. 1939, M.D. 1943; 5120 Scarsdale Road NW., Washington, D. C.

Alfred Brigulio, M.D. 1936; 1929 Upshur Street NW., Washington, D. C.

Donald Harper Leeper, Jr., M.D. 1938 (B.S. 1932, Davidson College); 1835 I Street NW., Washington, D. C.

Roscoe Creer, M.D. 1935; 5205 Dorset Avenue NW., Washington, D. C.

THE GEORGE WASHINGTON LAW ASSOCIATION

The George Washington Law Association, the organization of graduates of the Law School, was founded in 1912 and has been affiliated with the General Alumni Association since 1926. Its purposes as stated in the constitution are to promote high standards of legal education, to keep the alumni of the Law School in closer touch with one another and especially with members of their own classes, to gather and publish at intervals information as to the whereabouts and activities of these alumni, and to further the interests of the Law School.

1957–58

President.—Bernard I. Nordlinger, A.B. 1929, LL.B. 1933; 3539 Chesapeake Street NW., Washington, D. C.

First Vice President.—Fontaine Cosby Bradley, LL.B. 1925; 1820 45th Street NW., Washington, D. C.

Second Vice President.—Sam Houston, LL.B. 1937 (National University); 725 13th Street NW., Washington, D. C.

Third Vice President.—Philbrick McCoy, LL.B. 1922, LL.M. 1923; The Superior Court, Los Angeles, Calif.

Secretary.—Nad A. Peterson, A.B. 1950, J.D. 1953; 3535 Valley Drive, Alexandria, Va.

Treasurer.—Samuel J. L'Hommedieu, Jr., LL.B. 1922; 2739 McKinley Street NW., Washington, D. C.

Executive Committee:

Arthur Clephane, LL.B. 1936 (National University); 1335 Land Title Bldg., Philadelphia, Pa.

A. Sherman Christenson, LL.B. 1931 (National University); 32 W. Center Street, Provo City, Utah

Charles Russell Cutler, J.D. 1949 (B.S. 1945, California Institute of Technology); 9304 Kingsley Avenue, Bethesda, Md.

Elizabeth Strachan Freret, LL.B. 1950 (A.B. 1942, Tulane University of Louisiana); 1162 W. Wakefield Drive, Alexandria, Va.

Robert Stocks Hope, A.B. 1950, J.D. 1951 (B.S. 1950, U. S. Merchant Marine Academy); 15 Vernon Terrace, Alexandria, Va.

Joseph D. Hughes, LL.B. 1934 (B.S. 1930, Alabama Polytechnic Institute; LL.M. 1935, Georgetown University); 1331 Bennington Avenue, Pittsburgh, Pa.

Arthur Logan, A.B. 1925, LL.B. 1926; Barley Mill Road, Greenville, Del.

George E. Monk, A.B. 1928, LL.B. 1930, LL.M. 1934; 4020 Franklin Street, Kensington, Md.

D. Dalton Mosteller, LL.B. 1924 (National University); 734 15th Street NW., Washington, D. C.

Edwin Starkey Nail, LL.B. 1951; 6653 Howe Place, Springfield, Va.

Claire L. Stout, LL.B. 1938 (A.B. 1933, University of Utah); 7304 Western Avenue, Chevy Chase, Md.

Richard W. Turner, LL.B. 1928 (National University); 514 Lullaby Lane, Route 5, Vienna, Va.

James F. Perrin, LL.B. 1937 (National University); 3027 Chestnut Street NW., Washington, D. C.

THE LIBRARY SCIENCE ALUMNI ASSOCIATION

The Library Science Alumni Association was organized in 1932 b graduates of the Division of Library Science and became an affiliate o the General Alumni Association in 1935. It was established to foster closer relationship between the Faculty and graduates and to furthe the interests of the Division of Library Science and of the University a a whole.

1958–59

President.—Clara Widger, ex 1929; 2115 F Street NW., Washington, D. C.

Vice President.—Mary Kelso, A.B. in L.S. 1940; 402 Oakwood Street SE., Washington, D. C.

Secretary.—Anna Moore Link, A.B. in L.S. 1933; 2530 Q Street NW., Washington, D. C.

Treasurer.—Virginia Whitney, A.B. in L.S. 1930; 3338 Military Road NW., Washington, D. C.

THE ENGINEER ALUMNI ASSOCIATION OF THE GEORGE WASHINGTON UNIVERSITY

The Engineer Alumni Association was organized in 1936 and has been affiliated with the General Alumni Association since that time. Its objects are to unite the graduates and Faculty of the School of Engineering in closer fellowship, to promote the general welfare of the School of Engineering and of the University at large, to foster activities of the engineering organizations recognized by the University, and to advance the profession of engineering in general.

1957–58

President.—Alfred Brox Moe, A.B. 1949, B.C.E. 1953; 130 S. Columbus Street, Arlington, Va.

Vice President.—Herbert Harry Rosen, B.S. in Eng. 1954; 3725 Macomb Street NW., Washington, D. C.

Secretary-Treasurer.—Anthony Thomas Lane, B.E.E. 1957; 1511 16th Road N., Arlington, Va.

Corresponding Secretary.—James J. Crenca, B.E.E. 1955; 3150 Buena Vista Terrace SE., Washington, D. C.

Executive Committee:

Frank Taylor Mitchell, Jr., B.E.E., 1940; 5520 Uppingham Street, Chevy Chase, Md.

Harry Cornelius Connor, B.S. in M.E. 1937; 4201 Sheridan Street, Hyattsville, Md.

Warren C. Crump, B.C.E. 1940; 4837 16th Street NE., Washington, D. C.

THE GEORGE WASHINGTON UNIVERSITY NURSES ASSOCIATION

The George Washington University Nurses Association was organized in 1914. In 1936 this organization was made an integral part of the General Alumni Association, and graduates of the School of Nursing were accorded associate membership. The objects of the Association are to hold in unison the graduates of the George Washington University Hospital School for Nurses, to care for its sick members and to promote the advance of nursing in the interest of the George Washington University Hospital.

1957–58

President.—Claudine Clark Thomas, N. Cert. 1927; 1714 N. Adams Street, Arlington, Va.

Vice President.—Ruby Garthright Gottwals, N. Cert. 1914; 2129 19th Street N., Arlington, Va.

Secretary.—Ruth Poindexter, N. Dip. 1924; 1815 17th Street NW., Washington, D. C.

Treasurer.—Alma W. Stevens, N. Dip. 1928; 4106 Madison Street, Hyattsville, Md.

THE PHARMACY ALUMNI ASSOCIATION

The Pharmacy Alumni Association was organized in 1955 and is affiliated with the General Alumni Association. Its objects are to unite the graduates and Faculty of the School of Pharmacy in closer fellowship, to promote the general welfare of the School of Pharmacy and of the University at large, to foster activities of the pharmacy organizations recognized by the University, and to advance the profession of pharmacy in general.

1958–59

President.—F. Royce Franzoni, B.S. in Phar. 1936; 3508 N. Abingdon Street, Arlington, Va.

Vice President.—Morris Gersel Goldstein, Phar.D. 1915; 2704 Woodley Place NW., Washington, D. C.

Secretary-Treasurer.—Albert Morris DuGoff, B.S. in Phar. 1951; 8506 Tahona Drive, Silver Spring, Md.

REGIONAL ALUMNI CLUBS

Regional alumni clubs sponsored by the General Alumni Association re maintained in the following places: Los Angeles, Calif.; Miami, Fla.; tlanta, Ga.; Chicago, Ill.; Baltimore, Md.; Boston, Mass.; Detroit, ich.; Kansas City, Mo.; Brooklyn, N. Y.; New York City, N. Y.;

Cleveland, Ohio; Tulsa, Okla.; Philadelphia, Pa.; Pittsburgh, Pa Dallas, Texas; Seattle, Wash.; Milwaukee, Wis.; Arkansas; Northe California; New Jersey; Ohio River Valley; Utah; Hawaii; Philippi Islands; Puerto Rico.

Information about the officers and activities of these clubs may be o tained from the Alumni Office of the University.

THE GRADUATE ENDOWMENT FUND

The Graduate Endowment Fund was founded by the class of 192 with the object of providing endowment to be used for the development o the University. Membership is limited to seniors and graduates who sig a pledge of $100, payable annually in ten equal installments.

The pledge notes and funds are held in trust. When the principa reaches the sum of $100,000, the Board of Administrators of the Fund ma pay the University such sums as it may vote for the erection of buildings acquisition of sites, maintenance, and purchase of equipment. At no tim may money be drawn so as to leave a balance of less than $50,000 o deposit.

On request, the Alumni Office of the University will furnish pledg blanks to alumni.

THE COLUMBIAN WOMEN

The objects of this organization are (1) the promotion of acquaint-anceship among its members; (2) the advancement of women by the founding of scholarships in the various departments of the University; and (3) the promotion of the interests of the University.

Membership

The following persons shall be eligible for active membership: (a) any woman who is currently registered or has been previously registered as a student in The George Washington University; (b) any woman member of the Faculties or Board of Trustees, any woman on the administrative staff; the wife of any member of the Faculties; Board of Trustees, or of the administrative staff; (c) any woman recipient of an honorary degree from the University.

1958–59

President.—Sally Steele MacDonald, A.B. 1940, M.D. 1943; 10602 Dur-kirk Drive, Silver Spring, Md.

First Vice President.—Dora Mildred Ihle, A.B. 1935, A.M. 1936; 2427 Virginia Avenue NW., Washington, D. C.

Second Vice President.—Margaret E. Moore, A.B. 1933; 1109 Cross Drive, Alexandria, Va.

Treasurer.—Winifred Cox, A.B. 1934; 2013 New Hampshire Avenue NW., Washington, D. C.

Assistant Treasurer.—Mary Stadtmueller, A.M. 1952 (A.B. 1925, Coe College); 1115 Geranium Street NW., Washington, D. C.

Corresponding Secretary.—Elma Williams, A.B. 1954; 2032 Belmont Road NW., Washington, D. C.

Recording Secretary.—Sue Ann Stockton, A.B. 1955; 7328 Forest Road, Hyattsville, Md.

Historian.—Mary Murray Kochka, A.B. 1918; A.M. 1931; 5629 Lamar Road NW., Washington, D. C.

THE WOMEN'S BOARD OF THE GEORGE WASHINGTON UNIVERSITY HOSPITAL

The object of this organization is to aid in every way the interests and advancement of the George Washington University Hospital. Meetings are held on the first Wednesday of each month, October to June, inclusive. Inquiries regarding membership should be addressed to the Corresponding Secretary, The George Washington University, Washington 6, D. C.

1958–59

President.—Mrs. Cloyd Heck Marvin
Vice President.—Mrs. John L. Parks
Vice President.—Mrs. Walter A. Bloedorn
Vice President.—Miss Grace Burton
Recording Secretary.—Mrs. Carl H. Walther
Corresponding Secretary.—Mrs. Hulbert T. Bisselle
Assistant Corresponding Secretary.—Miss Mary McCall Henderson
Treasurer.—Mrs. Wolfram K. Legner
Assistant Treasurer.—Mrs. Paul W. Bowman
Members at Large:
Mrs. Robert W. Bolwell
Mrs. Bruce Smith
Mrs. Charles W. Stiles

Dallas, Texas; Seattle, Wash.; Milwaukee,

Islands; Puerto Rico.

THE GRADUATE EXPERIENCE

The Graduate Experience Fund was founded [illegible]

the University. Membership is limited to [illegible]

a pledge of $100 payable [illegible] equal [illegible]

The [illegible]

contribute the sum of $100 [illegible]

[illegible]

On [illegible]

THE COLUMBIAN WOMEN

The officers of this organization [illegible]

annually among its members; (2) [illegible]

[illegible] scholarships [illegible]

and (3) the promotion of the [illegible]

The following persons shall be [illegible]

women who [illegible]

student in The George Washington University

to the Executive Board [illegible]

and the wife of any member of the Faculty [illegible]

the administrative staff; (3) any woman [illegible]

[illegible]

President—Sally Jane McDonald, A.B. [illegible]

[illegible]

First Vice President—Mrs. Mildred [illegible]

Virginia Avenue NW., Washington

THE GEORGE WASHINGTON UNIVERSITY BULLETIN

Vol. LVII

No. 9

THE COLLEGE OF GENERAL STUDIES

WASHINGTON 6, D. C.
PUBLISHED IN AUGUST
MCMLVIII
BY THE UNIVERSITY

1958

July

S	M	T	W	T	F	S
..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..

August

..	..	..	..	..	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

September

..	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..

October

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5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	..

November

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2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	..	..	..	..	..	..

December

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7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	..	..	..

1959

January

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4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

February

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

March

1	2	3	4	5	6	7
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29	30	31	..	..	..	..

April

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5	6	7	8	9	10	11
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26	27	28	29	30	..	..

May

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17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

June

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7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	..	..	..	..

July

S	M	T	W	T	F	S
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19	20	21	22	23	24	25
26	27	28	29	30	31	..

August

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2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
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September

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6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
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October

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4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

November

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8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
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December

..	..	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	..	..

COLLEGE OF GENERAL STUDIES CALENDAR*

Date	Day	Occasion
1958 FALL SEMESTER:		
Sept. 2–12 ...	Tuesday through Friday	Preadvising for all entering Junior College and School of Engineering students
*Sept 2–Oct. 31.	Tuesday through Friday	Period for Off-Campus registration† and beginning of classes
Sept. 11	Thursday	Orientation Assembly for all new On-Campus Students
Sept. 18–19 ...	Thursday and Friday .	Registration on Campus†
Sept. 19	Friday	CGS Meeting of Staff of Instruction, Monroe 101, 8:00 P.M.
Sept. 22	Monday	Classes begin On Campus
Sept. 26–27 ...	Friday and Saturday..	Comprehensive examinations for Master of Arts candidates
Oct. 3	Friday	Last day on which candidates may file thesis subjects for the Master's degrees to be conferred in February
Oct. 18	Saturday	Fall Convocation
Nov. 11	Tuesday	Veterans Day. Holiday
Nov. 27–29 ...	Thursday through Saturday	Thanksgiving recess
Dec. 5–6	Friday and Saturday .	Comprehensive examinations for Master of Arts candidates
Dec. 13	Saturday	Graduate Record Examination
Dec. 22–Jan. 3.	Monday through Saturday	Christmas recess
1959		
Jan. 5	Monday	On-Campus classes resume
*Jan. 5–Feb. 13.	Monday through Friday	Period for Off-Campus registration† and beginning of classes
Jan. 6	Tuesday	Theses of February Master's candidates due
Jan. 14	Wednesday	Last day of Campus classes for the fall semester
Jan. 19–27	Monday through Tuesday	On-Campus examination period

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* Courses in the College of General Studies may be organized upon request at any time during e year.

† Applying for a degree is the responsibility of the student and must be done at the time of istration for the last semester of the senior or final year.

COLLEGE OF GENERAL STUDIES CALENDAR—Continued

Date	Day	Occasion
SPRING SEMESTER:		
Jan. 29–30	Thursday and Friday	Registration On Campus*
Jan. 31	Saturday	CGS Meeting of Staff of Instruction, Monroe 101, 10:30 A.M.
Feb. 2	Monday	Classes begin On Campus
Feb. 13	Friday	Last day on which candidates may file thesis subjects for the Master's degrees to be conferred in June
Feb. 23	Monday	Winter Convocation. Holiday
Mar. 27–Apr. 1	Friday through Wednesday	Easter recess for On-Campus courses; and Off-Campus courses in Education
Apr. 3–4	Friday and Saturday	Comprehensive examinations for Master of Arts candidates
Apr. 11	Saturday	Graduate Record Examination
April 15	Wednesday	Theses of June Master's candidates due
May 13	Wednesday	Last day of On-Campus classes for the spring semester
May 14	Thursday	Information, Education, and Training Officers Luncheon, Faculty Club, 12:30 P.M.
May 18–26	Monday through Tuesday	On-Campus examination period
May 30	Saturday	Memorial Day. Holiday
May 31	Sunday	Baccalaureate Sermon
June 3	Wednesday	Commencement
SUMMER SESSIONS:		
June 1–15	Monday through Friday	Registration* for summer classes in the Off-Campus Division
June 15	Monday	Registration* On Campus for the eight-week term
June 16	Tuesday	Classes begin On Campus
July 4	Saturday	Independence Day. Holiday
July 10–11	Friday and Saturday	Comprehensive examinations for Master of Arts candidates
Aug. 7	Friday	Summer Sessions end On Campus
Aug. 10	Monday	Theses of October Master's candidates due
Sept. 17–18	Thursday and Friday	Registration On Campus for the fall semester of the academic year 1959–1960

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* Applying for a degree is the responsibility of the student and must be done at the time of registration for the last semester of the senior or final year.

OFFICERS OF ADMINISTRATION

Cloyd Heck Marvin, Ph.D., LL.D., *President of the University*
Oswald Symister Colclough, B.S., LL.B., LL.D., *Dean of Faculties*
Grover LaMarr Angel, A.M., Ed.D., *Dean of the College of General Studies*
Walter Harold Hayes, Jr., A.M., *Assistant Dean in the College of General Studies*
Robert Clinton Rutledge, A.M., *Director of the Off-Campus Division*

Administrative Staff

Robert Whittington Eller, A.M., *Assistant Director of the Off-Campus Division*
Alexander Grant Rose III, A.M., *Assistant Director of the Off-Campus Division*
Russell Ward Millar, Jr., A.M., *Assistant Director of the Off-Campus Division*
John Arnold Timour, A.B., *Assistant Director of the Off-Campus Division*
Jessie Edith Mullins, A.M., *Assistant to the Dean; Chief of the Registration Processing Section*
Lillian Fox Quigley, *Assistant to the Assistant Dean; Assistant Director of the Division of Community Services*
Frances-Claire Iglehart, *Secretary to the Dean*
Constance Zoila Saah, *Secretary to the Director and Assistant Directors of the Off-Campus Division*
Elisabeth Pierce Clarkson, *Registration Processing Assistant*
Gregory Michael Sullivan, *Receptionist*

Special Program Directors

Mary Ellen Coleman, A.M., *Director of the Reading Clinic*
aura Furtado McCarty, A.M., *Assistant Director of the Reading Clinic*
ella Mills Huse, A.M., *Clinician in the Reading Clinic*

COMMITTEES *

The Deans Council

enjamin Douglass Van Evera
lin Rex Johnson
n Carlos Faith
Carl Hugo Walther
Blake Smith Root
Philip Henry Highfill, Jr.

The Dean and the Assistant Dean are members ex officio of all Committees.

Committee on Undergraduate Admission and Advanced Standing

The Dean of the College, *Chairman*

Lubin Poe Leggette
James Carlton Dockeray
George Elbert McSpadden
James Willard Harkness
Harland Walter Westermann
Harold Griffith Sutton, *Ex Officio*

Committee on Graduate Studies

The Dean of the College, *Chairman*

Ira Bowers Hansen
Fred Salisbury Tupper
Arlin Rex Johnson
David Springer Brown
Herbert Hubben
Harold Griffith Sutton, *Ex Officio*

Committee on Scholarship

Walter Harold Hayes, Jr., *Chairman*

Florence Marie Mears
Harry Grubb Detwiler
Alfred Gaylord Obern
Fred Everett Nessell, *Ex Officio*

Committee on Curriculum and Programs

Burnice Herman Jarman, *Chairman*

Benjamin Douglass Van Evera
James Harold Coberly
Richard Walton Stephens

STAFF OF INSTRUCTION

May 1957–May 1958

Allen William Abbott, M.C.E., *Associate in Mathematics*
Kenneth Anderson Ackley, B.S., LL.B., LL.M., *Lecturer in Mechanical Engineering*
Carroll Edward Adams, Jr., M.S., *Associate in Mathematics*
Dean Albertson, Ph.D., *Lecturer in History*
John Gage Allee, Jr., Ph.D., *Associate Professor of English Philology*
Charles Harper Anderson, A.B., B.C.L., LL.M., *Lecturer in Political Science*
Grover LaMarr Angel, A.M., Ed.D., *Associate Professor of Education*
Frank Melvin Arthur, M.B.A., *Lecturer in Business Administration*
Joseph Kahl Ash, B.S., M.Litt., *Lecturer in Accounting*
Ruth Harriet Atwell, A.M., *Professor of Physical Education for Women*
William Elwood Baker, A.M., C.L.U., *Lecturer in Business Administration*
Arthur Sparrow Banks, A.M., *Associate in Political Science*
Joseph Earl Barber, M.S., Ed.D., *Lecturer in Psychology*
Salah Ali Batrawi, A.M., *Associate in Psychology*
William Robert Belmont, A.M., *Associate in Economics*
James Harrison Benner, LL.B., C.L.U., *Lecturer in Business Administration*
Wilbur Earle Benson, M.B.A., *Assistant Professor of Accounting*
eymour Sanford Berlin, A.B., *Lecturer in Public Administration*
tanley Louis Berlinsky, Ph.D., *Lecturer in Speech*
ohn James Bernard, LL.B., *Lecturer in Business Administration*
ee Sheward Bielski, A.M., *Assistant Professor of Speech*
illiam Braxton Blanks, Ed.M., *Associate in Economics*
ictor Levi Bondi, A.B., *Associate in French*
aurice Hugh Boutelle, Ed.B., M.B.A., *Associate in Business Administration*
rlton Ernest Brett, Ed.B., A.M., *Associate in English*
rest Carlyle Brimacombe, M.B.A., *Professorial Lecturer in Accounting*
vid Springer Brown, Ph.D., *Professor of Public Administration*
deric Siegfried Burin II, Ph.D., *Lecturer in Political Science*
liam Francis Cahill, B.E.E., M.S., *Associate in Mathematics*
ton Bryant Chandler, M.B.A., *Professorial Lecturer in Engineering Administration*
g Gottlieb Cheslaw, Ph.D., *Lecturer in Political Science*

I-Kua Chou, LL.B., A.M.L.D., Ph.D., *Lecturer in Political Science*
Warren Ira Cikins, C.P.A., M.P.A., *Associate in Political Science*
John Fulmer Clark, Ph.D., *Lecturer in Mathematics*
William Graham Clubb, Ph.D., *Assistant Professor of French*
Charles William Cole, Ph.D., *Professor of American Literature*
Cletus Aelred Cole, Ph.D., *Lecturer in Psychology*
Mary Ellen Coleman, A.M., *Assistant Professor of Education*
John Joseph Collins, A.M., *Associate in Psychology*
Joseph Geoffrey Colmen, Ph.D., *Lecturer in Psychology*
Donald Howard Crosby, Ph.D., *Associate in German*
Beverly Anderson Crump, Ed.M., *Lecturer in Education*
Wade Richardson Currier, A.M., *Lecturer in Geography*
Mirek Jan Dabrowski, A.B., *Associate in Speech*
Marilyn Davis, A.M., *Special Lecturer in the College of General Studies*
Orlo Lovell Day, Ed.D., *Lecturer in Education*
Louis Linwood Dees, A.B., LL.B., *Associate in History*
Harry Grubb Detwiler, A.M., *Assistant Professor of Education*
Edward Peter Devine, A.M., *Lecturer in Geography*
Warren Peyton De Witt, B.S., *Associate in Mathematics*
David Bruce Dickens, A.B., *Associate in German*
Oscar Charles Disler, A.B., *Lecturer in Accounting*
Wayne Elliot Dorman, A.B., C.L.U., *Lecturer in Business Administration*
Jesse Frank Doubleday, A.M., *Associate in Business Administration*
Alfred Theodore Drury, A.M., *Associate in English*
Roy Brandon Eastin, Ph.D., *Associate Professorial Lecturer in Public Administration*
William Benjamin Evans, Jr., A.M., *Lecturer in Education*
Victor Harald Evjen, A.M., *Special Lecturer in Correctional Administration*
Don Carlos Faith, Ph.D., *Associate Professor of Educational Psychology*
Cornelius Guy Ferguson, Jr., A.B., *Associate in Spanish*
George Mallette Ferris, Jr., M.B.A., *Special Lecturer in the College of General Studies*
Gertrude Fitzwater, A.M., *Lecturer in Education*
William Lloyd Fox, A.M., *Lecturer in History*
Donald Kenneth Frank, A.M., *Associate in History*
Robert Harlan Gere, Ph.D., *Lecturer in History*
Marion Steel Giedemann, B.S., *Lecturer in Speech*
Howard Belding Gill, M.B.A., *Professorial Lecturer in Correctional Administration*
David Gold, A.M., *Associate in Business Administration*
Arthur Goldstein, A.B., LL.B., *Associate in Political Science*

Sidney Goldstein, LL.B., Ph.D., *Associate in Economics*
Ralph Abijah Goodwin, Ph.D., *Professorial Lecturer in Physics*
Charles Leon Grant, *Professorial Lecturer in Accounting*
Mary Louise Grau, A.B., Ed.D., *Lecturer in Education*
Monroe Johnson Hagood, Ph.D., *Lecturer in English*
Levin Bartow Hanigan, B.S., Ed.D., *Lecturer in Education*
Bernard Harris, A.M., *Associate in Statistics*
Woodrow Harrison, A.M., *Associate in Romance Languages*
Walter Harold Hayes, Jr., A.M., *Associate in Psychology*
George Walter Held, Ph.D., *Lecturer in Accounting*
George Francis Henigan, Jr., Ph.M., *Associate Professor of Speech*
Arthur Allen Hitchcock, Ph.D., *Professorial Lecturer in Psychology*
Eugene Earl Hixson, A.M., *Associate in Statistics*
Nathan Hanks Hixson, M.B.A., *Associate in Business Administration*
Jasper Wilson Holley, Ph.D., *Lecturer in Psychology*
Warren Smith Holmes, A.M., *Associate in Romance Languages*
John Lynn Hoover, Ph.D., *Lecturer in Accounting*
Charles Thomas Horn, Ed.D., *Lecturer in Education*
John Paul Hoyt, Ph.D., *Professorial Lecturer in Mathematics*
Zella Mills Huse, A.M., *Lecturer in Education*
Gaylord Irving Indvik, C.P.A., M.B.A., *Associate in Accounting*
Amil Walter Jackowski, A.M., *Associate in Secretarial Studies*
Robert Francis Jarecke, A.M., *Lecturer in Education*
Burnice Herman Jarman, A.M., Ed.D., *Professor of Education*
Gladys Gardner Jenkins, A.M., *Lecturer in Education*
Ralph Warren Jollensten, Ph.D., *Lecturer in Mathematics*
Augustus Clark Johnson, A.M., *Special Lecturer in the College of General Studies*
Everett Herschel Johnson, Ph.D., *Professor of Statistics*
George Glenn Killinger, Ph.D., LL.D., *Special Lecturer in Correctional Administration*
Myron Law Koenig, Ph.D., *Professor of American History*
Edward Harold Kolcum, A.B., *Associate in English*
Tom Kouzes, A.M., *Professorial Lecturer in Business Administration*
Frederick Charles Kurtz, M.B.A., C.P.A., *Associate Professor of Accounting*
Anthony Charles LaBue, B.S., Ed.D., *Associate Professor of Education*
Arthur Rufus Laney, Jr., Ph.D., *Lecturer in Psychology*
John Carl Lang, A.M., Ed.D., *Associate Professorial Lecturer in Education*
Carr Bartleson Lavell, A.M., *Associate Professor of Sociology*
Paul Willis Leach, A.M., *Associate in Mathematics*
Lubin Poe Leggette, A.M., Ed.D., *Depew Professor of Speech*

Jerome Ferris Lieblich, A.B., LL.B., *Associate in Business Administration*

Helena Keehne Lietwiler, A.M., *Lecturer in Education*

Joseph Lima, A.M., *Associate in English*

S. W. Lipsman, A.M., *Associate in English*

Burling Hunt Lowrey, A.M., *Associate in English*

William Carl Lowrey, Ed.M., *Professorial Lecturer in Education*

Raymond Albert Lucas, A.B., *Associate in Accounting*

Kenneth Margolis, B.S., *Lecturer in Mathematics*

William Andrew McCauley, Ph.D., *Assistant Professor of Education*

Malcolm Pollard McConnell, Jr., Ed.M., *Associate in History*

Edward McCrensky, Ed.M., *Associate Professorial Lecturer in Public Administration*

William Gerald McDonald, A.B., *Associate in Political Science*

Florence Marie Mears, Ph.D., *Professor of Mathematics*

John Peter Menard, A.B., *Associate in Mathematics*

Joseph Louis Metivier, Jr., A.M., *Assistant Professor of Romance Languages*

James Vinson Milano, M.B.A., *Associate in Business Administration*

Russell Ward Millar, Jr., A.M., *Associate in History*

Joseph Gorrell Kearfott Miller, Jr., A.M., *Associate in Political Science*

Lucille Helen Mitchell, A.M., *Lecturer in Education*

Cecil Van Horn Morris, A.B., Th.B., *Associate in Spanish*

Charles Van Wie Morris, B.S. in Ed., *Lecturer in Correctional Administration*

Joseph Patrick Murphy, A.B., LL.B., *Associate Professorial Lecturer on Commercial Law*

Richard Ernest Murphy, Ph.D., *Assistant Professor of Geography*

Chester Myslicki, A.M., *Associate in Economics*

Barbara Nolen, A.M., *Special Lecturer in the College of General Studies*

John Joseph Noone, Jr., M.S.S.W., *Associate in Psychology*

Alfred Gaylord Obern, Ph.D., *Assistant Professor of Public Administration*

Donald Eugene Oppert, A.B., *Associate in Mathematics*

Morgan Organt, M.S., *Associate in Mathematics*

Warren Arthur Parnell, B.S., *Associate in Mathematics*

Bradley Hawkes Patterson, Jr., A.M., *Lecturer in Public Administration*

Nancy Marie Patterson, Ph.D., *Instructor in English*

Harold Jackson Peake, M.S., *Lecturer in Mathematics*

Bradley Adelbert Peavy, B.S. in M.E., M.S., *Associate in Mathematics*

Shirley Pfoutz, A.B., *Associate in English*

Albert Piltz, Ed.D., *Professorial Lecturer in Education*

Louis Anthony Pingitore, Ph.D., *Lecturer in French*

Jean Alfred Pulver, A.B., *Associate in Romance Languages*
Raymond Lewis Randall, M.S., *Lecturer in Public Administration*
Edward Ashwell Raymond, Ph.D., *Associate in Political Science*
Milton Reilly, A.M., *Associate in Economics*
Ray Joseph Richards, A.B., C.L.U., *Lecturer in Business Administration*
Edgar Alderson Robey, A.B., *Associate in Secretarial Studies*
Blake Smith Root, A.M., Ed.D., *Professor of Education*
Alexander Grant Rose III, A.M., *Associate in English*
Robert Clinton Rutledge, A.M., *Associate in English*
Carol Ruth St. Cyr, Ph.D., *Assistant Professor of Education*
Mary Henderson Sanders, A.B., *Special Lecturer in the College of General Studies*
Robert William Schloemer, A.M., *Lecturer in Geography*
Milton Allan Schwartz, B.S., *Associate in Statistics*
Louis James Sharp, A.M., *Special Lecturer in Correctional Administration*
Mildred Hollander Shott, A.M., *Associate Professor of Secretarial Studies*
Kenneth Abram Shutts, A.M., *Associate in History*
Boyd Berkeley Sibert, Jr., M.B.A., *Special Lecturer in the College of General Studies*
Donald Wayne Silkwood, M.S., *Associate in Mathematics*
Ismael Silva-Fuenzalida, Ph.D., *Associate in Spanish*
John William Skinner, Ph.D., *Assistant Professor of Economics*
William Spencer, A.M., *Lecturer in Political Science*
Selig Starr, A.M., *Associate in Mathematics*
James Charles Stephens, A.M., *Professorial Lecturer in Public Administration*
Stephen James Stofko, Jr., B.S., *Lecturer in Geography*
William Henry Struhs, Jr., A.M., *Associate in English*
Charles Francis Suter, A.B., C.L.U., *Lecturer in Business Administration*
Robert Watson Sylvester, Ph.D., *Associate in Psychology*
Norman Tallent, Ph.D., *Lecturer in Psychology*
Roland Henry Tanck, Ph.D., *Associate in Psychology*
Ann Richards Taylor, A.B., *Special Lecturer in the College of General Studies*
Philip Duncan Thompson, Sc.D., *Professorial Lecturer in Geography*
John Arnold Timour, A.B., *Associate in English*
Fred Salisbury Tupper, Ph.D., *Professor of English Literature*
Edgar Allan Turpin, Jr., A.B., LL.B., *Lecturer in Business Administration*
Arthur Uscher, M.B.A., *Lecturer in Business Administration*
eslie Grady Wade, A.M., *Lecturer in Education*

Paul Wakefield, A.M., *Associate in English*
James Robert Wason, A.B., *Associate in Economics*
Harry Weingarten, A.M., *Associate in Statistics*
Murray Samuel Weitzman, Ph.D., *Associate in Economics*
Harland Walter Westermann, A.M., *Assistant Professor of Geography*
Joseph Lawrence Whyte, B.S., LL.B., C.L.U. *Lecturer in Business Administration*
Dagmar Wilson, *Special Lecturer in the College of General Studies*
Hazel Emma Wilson, A.M., *Lecturer in Education*
Hilda Kathreen Wine, B.S., Ed.M., *Lecturer in Education*
William Wolfgang Wolman, A.M., *Associate in Statistics*
Aaron Joseph Wraight, Ph.D., *Professorial Lecturer in Geography*
Ronald Eugene Wyllys, A.B., *Associate in Mathematics*
Virginia Howe Young, Ed.M., *Professorial Lecturer in Education*
William Packard Young, A.M., *Lecturer in Education*

THE GEORGE WASHINGTON UNIVERSITY

The George Washington University, established in 1821, is nonsectarian and coeducational. It includes the following fourteen colleges, schools, and divisions:

- The Junior College
- Columbian College
- The Graduate Council
- The School of Medicine
- The Law School
- The School of Engineering
- The School of Pharmacy
- The School of Education
- The School of Government
- The College of General Studies
- The Division of University Students
- The Division of Special Students
- The Division of Air Science
- The Summer Sessions

The University is in downtown Washington, four blocks west of the White House. Readily accessible to the University are the departments of State, Treasury, Justice, Army, Navy, Interior, Agriculture, Commerce, and Labor, as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

The University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The University's educational programs in all degree-granting schools and colleges, except the School of Medicine, enable employed students to matriculate on a part-time basis and to obtain undergraduate and graduate degrees by taking evening or Saturday classes. The Division of University Students, established in 1930, makes University work available to mature students not working toward degrees in this institution. To supplement these programs, the College of General Studies was established in October 1950.

THE COLLEGE OF GENERAL STUDIES

The objectives of the College of General Studies are to extend the adult education facilities of the University; to introduce experimental procedures in conducting programs of study for mature students; and to provide auxiliary educational services other than formal programs of study for the community.

The College of General Studies is organized into the following divisions: the Off-Campus Division, the Campus Division, and the Division of Community Services. Its offices are in building F at 706 Twentieth Street NW.

Academic Standards

The staff of instruction is made up of members of the regular University Faculty and staff of instruction and other individuals of recognized academic and professional competence.

The academic standards of the University are maintained in off-campus credit courses.

Limits on the size of classes may be imposed in order to maintain the quality of instruction.

OFF-CAMPUS DIVISION

This Division works closely with personnel administrators, training officers, school officials, and others interested in developing programs of in-service training, in response to increased demands of government, education, business, and industry. Programs are also offered for service personnel who wish to work toward degrees or for professional proficiency. Off-Campus centers are listed on pages 38–48.

Types of Programs

The College will offer a course in any field on the college or university level for which there is a sufficient demand and for which a qualified instructor can be found, regardless of whether or not it is included in the regular offering of the University. According to the subject matter and the wish of the organizing group, courses are arranged as credit courses applicable toward a degree, or as noncredit courses. For information concerning arrangements for courses or comprehensive programs of study, phone STerling 3–0250, Extension 486 or 441.

How to Organize an Off-Campus Program

Any organization, group, installation, or agency interested in having the University organize and conduct a course or a comprehensive educational program, should get in touch with the Off-Campus Division of the

College of General Studies (STerling 3-0250, Extension 487 or 441). A representative will be sent upon request to discuss organizational plans.

Explanation of Course Numbers

Courses are assigned dual numbers. The first is a serial number assigned by the College of General Studies at the time of registration, and the second is a departmental course number assigned by the department concerned. The serial numbers are used to distinguish one class from another when the same course is offered simultaneously at different places. The departmental numbers indicate the academic level of each course. Numbers 1–100 indicate courses on the freshman and sophomore level, 101–200 on the junior and senior level, and 201–300 on the graduate level.

Candidates for the degree of Associate in Arts with the necessary prerequisites may, with the permission of the instructor and the approval of the Dean of the College of General Studies, take courses numbered 101–200. Graduate students may, with permission, do extra work under the direction of the instructor and receive graduate credit for second-group undergraduate courses. Graduate courses may be taken, with the permission of the instructor and the approval of the Dean of the College of General Studies, for advanced undergraduate credit.

ADMISSION

Registration in an off-campus course constitutes admission to that course only. It does not constitute admission to degree candidacy or carry with it permission to attend University classes on campus.

Credit Courses

Registration is conducted before or at the first meeting of each class. Transcripts of previous academic work are not required. Registration is estricted to those whose qualifications indicate that they are able to comlete the courses successfully.

Auditing—With the permission of the instructor, adequately prepared tudents may register as "Auditors". An auditor is not required to take ctive part in the exercises or to take examinations. No grades will be eported, and no credit will be received. Tuition is the *same* as for edit courses.

Concurrent Registration—Students enrolled in any other college, hool, or division of the University may take credit courses in the Colge of General Studies *only by permission of the dean* of the college, hool, or division concerned. Special forms for "Concurrent Registran" must be filled out at the time of registration in the College of Genl Studies.

Noncredit Courses

Noncredit courses are open to anyone interested in enrolling. When a course is organized at the request of a particular agency or group, admission may be restricted to the students recommended by the sponsoring organization.

Degree Candidacy

Application for degree candidacy should be made only if there is a reasonable assurance that the student will be in the area long enough to complete the requirements. Credits granted by this College for the General Educational Development tests and for service schools and correspondence courses may or may not be accepted by another institution or by other schools and colleges of this University.

The following factors are considered in determining the eligibility of an applicant:

1. The adequacy of previous academic work as preparation for the course of study contemplated, including quantity and quality of work and the standing of the institution in which it was done.

2. Results of specified tests, when prescribed by the Committee on Admissions.

3. The aptitude of the student for the course contemplated.

4. The character of the student.

The University reserves the right to refuse admission to any student who has a previous academic record of such grade as to create doubt of his ability to pursue college work successfully, or who, for any other reason, would not be a desirable student.

Methods of Admission

FROM SECONDARY SCHOOLS

An applicant from a secondary school may seek to qualify for admission to degree candidacy by certificate or examination.

A certificate of graduation with a minimum of fifteen "units" * from an accredited secondary school and the recommendation from the principal of the secondary school that the applicant is prepared to undertake college work will be acceptable if the applicant meets the following conditions:

1. If the school is accredited by the regional accrediting association, the student must rank not lower than the fourth fifth of his class or qualify by passing the University aptitude tests.

2. If the school is not listed by the regional accrediting association but has been accredited by the state accrediting agency, the student must rank in the upper three fifths of his class or qualify by passing the University aptitude tests.

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* A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of prepared classroom work.

3. Service personnel and veterans who are not high school graduates but have qualifying scores on the General Educational Development tests (High School Level) may, with the permission of the Dean or the Assistant Dean, be admitted conditionally to complete, under the guidance of an academic adviser, 24 semester hours in the College of General Studies. In some cases, the University aptitude tests may also be required.

FROM HIGHER INSTITUTIONS [*]

An applicant for advanced standing may be considered for admission upon the presentation of satisfactory credentials from an accredited institution of higher learning.

Properly certified courses taken at accredited colleges or universities may be applied toward a degree in the College of General Studies, subject to the curriculum requirements of the degree program for which admission is sought. Work of low passing grade (such as *D* or the equivalent) is not acceptable for transfer.

Applicants who wish advanced standing must request transcripts of their previous academic work from the institution in which the work was done. In every case the transcript must be sent directly from the institution which the student formerly attended to the Office of the Director of Admissions, The George Washington University, Washington 6, D.C.

Entrance Requirements

An acceptable certificate of graduation from an accredited secondary school is required.

Certification by the principal that the student has satisfied all curriculum requirements of the school will be accepted in lieu of any prescribed distribution of units. A desirable secondary school program in preparation for college would include four years of English, four years of foreign language (at least two years of which are in the same language), two years of natural or physical science with laboratory intruction (beyond the so-called "General Science"), two or three years f social studies (with concentration on history), one or two years of asic mathematics.

SPECIAL REQUIREMENTS FOR ADMISSION TO DEGREE CANDIDACY

To be eligible for admission to degree candidacy the student must ave satisfactorily completed 6 semester hours of approved academic ork in the College of General Studies. Twelve semester hours of ac- ptable work are required of applicants whose previous college records ght make admission questionable. A grade of *C* or better is required r such qualifying courses toward undergraduate degrees; for Master's

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The University reserves the right to refuse advance credit in whole or in part or to allow it visionally. Credit so given may be withdrawn for subsequent poor work.

candidacy an average of *B*, or better is required for undergraduate prerequisite courses, "Satisfactory" or "Excellent" for graduate courses.

Application for degree candidacy should be filed as soon as the required 6 hours are satisfactorily completed.

Students must confer with the Assistant Dean or the Director of the Off-Campus Division before applying for admission to degree candidacy. Appointments may be made by telephone (STerling 3-0250, Extensions 441 or 487) or by letter.

ADVANCED STANDING

A maximum of 30 semester hours of advanced standing toward the degree of Associate in Arts may be earned by the following methods:

1. *GED Tests.*—A maximum of 24 semester hours obtained on the basis of the College Level GED test (first year):

Test 1: Correctness and Effectiveness of Expression
  English 1-2: *English Composition* (6)
Test 2: Interpretation of Reading Materials in the Social Studies
  Political Science 9: *Government of the United States* (3)
  Sociology 1: *Introductory Sociology* (3)
Test 3: Interpretation of Reading Materials in the Natural Sciences
  Chemistry 3-4: *Survey of the Physical Sciences* (6)
Test 4: Interpretation of Literary Materials
  English 51-52: *Introduction to English Literature* (6)

Credit earned by GED tests does not substitute for prerequisite course requirements in the major field. Service personnel may arrange, through their Education Officers, to take the tests prior to or at the time of application for admission to degree candidacy. Civilian students may take the GED tests at the University Testing Center upon the completion of 6 semester hours in the College of General Studies. A student, either military or civilian, who plans to take the GED tests, should do so before the completion of his first full term as a degree candidate.

2. *Service Schools.*—A maximum of 24 semester hours may be obtained on the basis of service schools satisfactorily completed, as evaluated by the United States Armed Forces Institute Guide to the Evaluation of Educational Experience in the Armed Forces. Ordinarily such credits are counted as electives. No credit will be allowed for military experience as such.

3. *Correspondence Courses.*—A maximum of 12 semester hours may be earned through the successful completion of approved correspondence courses of college level.

4. *Validating Examinations.*—A maximum of 12 semester hours may be obtained by validating examinations. With the approval of the Dean or the Assistant Dean and the department concerned, permission to take such examinations is granted those who are qualified by work experience

and background. Validating examinations must be completed during the first full semester in which the student is registered as a degree candidate. The fee for each three-hour course examination is $5.

EXAMINATION FOR WAIVING CURRICULUM REQUIREMENTS

During the first full semester of degree candidacy, a student wishing to omit a required course may, with the permission of the Dean or the Assistant Dean, take a waiver examination, the passing of which relieves him of the curriculum requirement and qualifies him for registration in an advanced course. *Passing of the waiver examination does not entitle the student to credit toward a degree.* The fee for each three-hour course examination is $5.

FEES

Application fee, charged each applicant for admission to degree candidacy (payable by check or money order only and sent directly to Office of the Director of Admissions), nonrefundable	$10.00
Graduation Fee	
For the degree of Associate in Arts	$10.00
For the degree of Associate in Science	$10.00
For the degree of Bachelor of Arts	$25.00
For the degree of Bachelor of Science in Cartography	$25.00
For the degree of Master of Arts	$25.00
Tuition fee, for each semester hour for which the student registers	$14.00
The Education Program of the Armed Forces may defray a maximum of $7.50 a semester hour, for service personnel.	
Fee for binding the Master's thesis	$ 6.00
Withdrawal fee, charged each student who drops a course for which he is registered, before the first class meeting	$ 5.00
Reinstatement fee, charged each student who is reinstated after suspension for delinquency in payment of fees	$ 5.00
Residence fee, charged each degree candidate who wishes to maintain "in residence" status during any semester of absence from the University	$14.00
General Education Development Battery (GED tests) fee (college or high school)	$ 5.00
Validating Examination fee	$ 5.00
Fee for examination for waiving curriculum requirements	$ 5.00

PAYMENT OF FEES

OFF-CAMPUS COURSES

For fifteen-week credit course. . . . . . . Payable in 3 equal installments: the first at time of registration; the second, 30 days after the beginning of the course; the third, 60 days after the beginning of the course. A student who fails to complete all tuition payments no later than 15 days after the final installment is due will be automatically suspended and may not attend classes or take final examinations until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of $5.

For eight-week credit course	Payable in full at registration
For noncredit course	Payable in full at registration

CAMPUS COURSES

For regulations governing the payment of fees for Campus courses, see the University catalogue.

REFUND OF FEES

In no case will a refund of fees be made for eight-week credit courses or for noncredit courses unless the course is cancelled.

Fifteen-week credit courses.—In no case will the initial payment for a course be refunded unless the course is cancelled. The second payment will be waived or refunded if the course is dropped within the first thirty days. The third payment will be waived or refunded if the course is dropped within the second thirty days. No refund will be allowed on withdrawal subsequent to the second thirty-day period.

This regulation does not apply if a student withdraws from one course to enter another, or if a class is cancelled because of insufficient enrollment.

VETERANS EDUCATION

The George Washington University is approved to provide training for eligible persons under the provisions of Public Laws 346, 16, 550, 894, and 634. The Office of Veterans Education, Building Q, 2029 H Street NW., (Telephone: STerling 3–0250, Extension 334) operates as a service bureau for such persons interested in studying at the University and acts in a liaison capacity between the University and the Veterans Administration. Here information may be obtained concerning the educational program of the University and the procedures for securing educational benefits under the GI and War Orphans bills.

Veterans should consult the Office of Veterans Education concerning possible educational eligibility and benefits before considering application to the College of General Studies for instruction or degree candidacy.

PUBLIC LAW 634 (WAR ORPHANS EDUCATIONAL ASSISTANCE ACT)

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict may be eligible for educational assistance under this Act, if certain age requirements are met.

In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration. For further information concerning the benefits available under this Law, consult the University Office of Veterans Education.

PUBLIC LAW 346 (WORLD WAR II GI BILL)

The educational benefits for veterans under Public Law 346 terminated July 25, 1956, except as follows:

The Armed Forces Voluntary Recruitment Act of 1945, (Public Law 190) provided that persons enlisting or reenlisting in the Armed Forces between October 6, 1945, and October 5, 1946, may count the entire period of such enlistment or reenlistment as war service for purposes of GI Bill benefits. Such enlistees, have four years from the date that enlistment ended to begin training and nine years from that separation date to complete training under this provision.

It is suggested that a veteran having any question regarding his eligibility consult the University Office of Veterans Education.

PUBLIC LAW 550 (KOREAN GI BILL)

In order to be eligible for the benefits under this Law, a veteran must have been in service between June 27, 1950, and January 31, 1955, and must no longer be on active duty.

At least thirty days prior to registration the veteran wishing to attend under this Law should apply to the Veterans Administration for a Certificate for Education and Training, for presentation to the University Office of Veterans Education at the time of registration. A photostatic copy of his DD214 must accompany the original application for certification.

PUBLIC LAWS 16 AND 894 (VOCATIONAL REHABILITATION)

Disabled veterans desiring vocational rehabilitation under either Law should apply to the Veterans Administration for approval of their training objectives at least sixty days prior to registration.

REGULATIONS

Students in the College of General Studies are subject to and are expected to be familiar with the general University regulations stated in the University catalogue, which is available at the Office of the Director of Admissions.

ATTENDANCE

The student is held responsible to the instructor in charge of the course for all of the work of the course. All absences must be excused before provision will be made for the student to make up work missed.

Absences will be excused if the number of class hours missed does not exceed the semester hours for the course. In a fifteen-week course in which classes meet once a week, *one* unexcused absence is permitted. In a fifteen-week course in which classes meet twice a week *two* unexcused absences are permitted. In an eight-week course meeting twice a week, *one* unexcused absence is permitted.

Absences immediately preceding or following holiday periods are counted double.

Excuses for two or more consecutive class periods, and for absences from examinations which have been announced in advance, may be obtained only by making written application to the instructor.

SCHOLARSHIP

Grades

Grades are mailed to the student through the Office of the Registrar at the close of each semester. They are not given out by instructors or the administrative staff of the College.

Undergraduate Grading System.—A, excellent; *B*, good; *C*, average; *D*, passing; *F*, failing; *W*, authorized withdrawal; *Inc.*, incomplete. The symbol *Inc.* indicates, temporarily, that all the required work of the course has not been completed and a satisfactory explanation has been given to the instructor. An "incomplete" cannot be made up after the lapse of one calendar year, except by permission of the Dean's Council.

No student may repeat, for a grade, a course in which he has received a grade of *D* or above, unless required to do so by the department concerned.

Graduate Grading System.—"Excellent", "Satisfactory", "Unsatisfactory", "Incomplete", and *W*, authorized withdrawal.

Quality-Point Index

Quality points are computed from grades as follows:

For each semester hour of the letter grade—*A*, 4 points; *B*, 3 points; *C*, 2 points; *D*, 1 point; *F*, no points.

Scholarship is computed in terms of the quality-point index. This is done by dividing the total number of quality points by the total number of semester hours for which the student has registered. Example: if a student received an *A* in one three-credit course, and a *B* in another three-credit course, he would compute his quality-point index in this way:

A = 4 x 3 (semester hours) = 12
B = 3 x 3 (semester hours) = 9
— —
6 21 ÷ 6 = 3.5 quality-point index

Courses marked *W* or *Inc.* are not considered in determining the index. If an "incomplete" is not superseded by a proper grade within one calendar year, it is automatically computed as zero quality points. Grades in courses taken at other institutions are not considered in computing the quality-point index.

Warnings

At stated intervals during the academic year instructors file in the Office of the College of General Studies the names of those students taking courses with departmental numbers below 100, who are doing work of *D* grade or lower. A "warning" will then be sent to the student. A "warning" constitutes notice to the student that he must consult his instructor at the earliest opportunity. "Warning periods" are established during the seventh and eighth weeks of fifteen-week courses, and during the third and fourth weeks of eight-week courses.

Probation

A student must maintain a quality-point index of at least 2.00 or be placed on probation.

A student who has attempted 12 or more semester hours of work and whose quality-point index is between 1.50 and 2.00 will be placed on probation for the period in which he attempts 12 additional semester hours of work. If his quality-point index is still below 2.00 at the end of this probationary period he will be suspended. The Committee on Scholarship reserves the right to extend the period of probation even if the student has earned an average of above 2.00. A student placed on probation for a third period, whether successive or after an interval, will be suspended.

Suspension

A student who has attempted 12 or more semester hours of work and whose quality-point index is below 1.50 is subject to suspension; however, a student who has a quality-point index between 1.40 and 1.50 will be considered by the Committee on Scholarship, which may retain him on probation or suspend him.

A student who is subject to probation for the third time, whether successive or after an interval, will be suspended.

A student suspended for poor scholarship may apply for readmission after an interval of one calendar year. In applying for readmission he must submit specific evidence to the Committee on Scholarship that he is better qualified to pursue college work. A student suspended twice for poor scholarship will not be readmitted.

READMISSION

A student who withdraws, is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return. Forms for readmission may be obtained from the Office of Admissions of the University.

CHANGES IN PROGRAM OF STUDIES

Dropping a Course

Courses meeting once or twice a week for 2½ hours may be dropped without academic penalty during the first 10 class periods, and courses meeting once or twice a week for 1¼ hours may be dropped without academic penalty during the first 20 class periods. The procedure is as follows:

1. Secure a University drop slip from the instructor or from the Training Officer.
2. Fill out the drop slip and have it signed and dated by the instructor.
3. Mail it to the College of General Studies, The George Washington University, Washington 6, D. C.

Withdrawing from a course without academic penalty after the 10th or 20th class meeting, as the case may be, requires approval of a written request, which should be addressed to the Dean of the College of General Studies.

Notifying an instructor of the intention to drop a course does *not constitute an official withdrawal.* Failure to follow the proper procedure will result in an automatic grade of *F* and, regardless of the time of discontinuance, will not relieve the student of financial responsibility for the entire course. (See "Refund of Fees" page 16.)

Transfer Within the University

Transfer to the College of General Studies, as a degree candidate, from another college, school, or division of the University may be made only with the approval of the deans concerned. Application for transfer should be made on the transfer form, which is available at the Office of the Director of Admissions. An insert form, obtainable at the College of General Studies, must also be filled out. (SEE ALSO "Transfer Within the University" in the University catalogue.)

A maximum of 45 semester hours is transferrable toward the degrees of Associate in Arts and Associate in Science; 90, toward the degrees of Bachelor of Arts and Bachelor of Science in Cartography; and 12, toward the degree of Master of Arts. Students transferring within the University are advised to note the residence requirements of the degree sought.

GRADUATION REQUIREMENTS

To be recommended for graduation a student must have met the admission requirements of the College, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—Application for graduation should be filed in the Office of the Registrar at the time of registration for the last semester of the senior or final year.

Scholarship.—The undergraduate must have a general quality-point index of 2.00. Candidates for the Bachelor's degrees must, in addition, have a quality-point index of 2.50 in the major. The graduate student must have at least the grade of "Satisfactory" in all courses.

Curriculum.—See the requirements for the degree concerned.

Residence.—A student is "in residence" only when registered as a degree candidate or for the 6 semester hours undertaken to qualify for degree candidacy (see the specific residence requirements for the degree concerned).

With the permission of the Dean, a student may be granted leave of absence; such student should, however, remain technically in residence by paying the residence fee for each semester he is absent. For the purpose of this regulation, the summer session will be disregarded.

Military personnel who are transferred from the Washington, D. C., area may request in writing and secure a National Service Leave card from the Dean which will allow them to maintain "in residence" status without payment of fees.

By special arrangement, service personnel who receive military transfers when they are within 6 hours of a degree, will be permitted to complete their work elsewhere, transfer these credits to the College of General Studies, and receive a degree from this University. This procedure does not apply to Master's candidates who have been granted 6 hours of transferred credit.

Graduate Record Examination.—During the senior or final year candidates for the Bachelor's degrees in the College of General Studies are required to take the Graduate Record Examination: the Aptitude Test, which provides a measure of general scholastic ability at the graduate level; and Area Tests (achievement), which measure breadth of knowledge and understanding in three broad areas of the liberal arts: Natural Science, Social Science, and the Humanities. The examinations are conducted by the University twice a year: the Fall Testing Session (December 13, 1958) for students graduating in February, and the Spring Session (April 11, 1959) for those graduating in June or October.

It is the responsibility of each student to register for the Graduate Record Examination at the College of General Studies, 706 Twentieth Street NW., during the registration period for the final semester of undergraduate study.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Thesis.—A thesis, submitted in partial satisfaction of requirements for the Master's degree, must be submitted in its final form to the Dean not later than the date specified in the University calendar. Three copies of each are required, one typewritten original and two legible and complete carbon copies. Detailed instructions for the styling should be obtained from the Dean.

Accepted theses, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the Dean.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation *in absentia* is approved by the Dean. The application should be in duplicate, should state the reason for the request, and give the address to which the diploma is to be sent. Petition for graduation *in absentia* should be received in the Office of the Dean at least two weeks prior to graduation.

Honors

Dean's List.—To be eligible for inclusion on the Dean's List, a full-time student must have a minimum quality-point index of 3.50 for the semester concerned; a part-time student must have a quality-point index of 3.50 on the last 12 semester hours of work and must have maintained continuous registration for at least one three-hour course during the period concerned.

With distinction.—The undergraduate degrees may be conferred "with distinction", at the discretion of the Dean's Council and the Committee on Scholarship, The George Washington University. If a student attains a quality-point index of 3.50 or higher on all work taken at this University except that taken during the semester immediately preceding the granting of the degree. To be eligible for this honor a student must have completed at this University at least one-half of the work required for the degree.

Special honors.—Special honors may be awarded to any member of the graduating class for outstanding achievement in the student's major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major department or field not later than the beginning of the senior year.

2. The student must meet such other conditions as may be set at the time his candidacy is approved.

3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this University except that taken during the semester immediately preceding the granting of the degree.

4. To be eligible for honors a student must have completed at this University at least one-half of the work required for the degree prior to the beginning of the semester immediately preceding the granting of the degree.

THE LIBRARY

A student registered in the College of General Studies is entitled to the reference use of the University Library. The student receipt, issued upon the payment of tuition fees, must be presented as identification.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

TRANSCRIPTS OF RECORD

Official transcripts will be sent by the Office of the Registrar to other institutions, on request of students. Unofficial copies of records will be issued to students on request. No charge is made for the first transcript. A fee of one dollar is charged for each one thereafter. No certificate of work done will be issued for a student who does not have a clear financial record.

COUNSELING

Students in the College of General Studies may obtain counseling and assistance in program planning in the offices of the College or from representatives of the Off-Campus Division at the installations and agencies at which courses are held. Appointments may be made by calling the College of General Studies: STerling 3–0250, Extension 441, 486, or 487; or through the Education or Training Officer at individual installations. University counselors are also available at all installations and agencies during announced registration periods.

In addition, the services of the George Washington University Testing and Counseling Center are available to all students in the College of General Studies. The counseling services are designed to assist individuals in making educational and vocational plans. The program requires twelve to sixteen hours of testing, scheduled in a series of three or four appointments. During this time, information concerning past experience, general ability, interest, personality, aptitudes, and achievement is obtained. Test results are interpreted and their implications discussed with the client. The Center is prepared to furnish related occupational and educational information. Clients are referred for specialized services when required. Follow-up is provided if requested.

The services offered by the Center include: aid in vocational choice; checking present training objectives; diagnosis of academic difficulties; checking suitability of present job; and special testing services, including General Educational Development Tests and Miller Analogies Test.

Fees.—Counseling Program: community clients under 21, $30; community clients over 21, $45; students currently enrolled in the University, $7.50. General Educational Development Battery (college or high school), $5; Miller Analogies Test, $4. Fees for specialized testing are dependent upon the services involved.

All fees are payable at the time of testing at the Testing and Counseling Center.

Appointments may be made by phone, mail, or in person. The Center is open from 9:00 to 5:00 Monday through Friday. The office is in Building N, 718 Twenty-first Street NW., Washington 6, D. C. Telephone: ST 3–7919 or ST 3–0250, Extension 463.

DEGREES

The College of General Studies has established programs of study leading to the degrees of Associate in Arts; Associate in Science; Bachelor of Arts; Bachelor of Science in Cartography; and Master of Arts in the fields of Controllership, Governmental Administration, and Personnel Management.

Associate in Arts

The College of General Studies offers two flexible programs of study, of 60 semester hours each, leading to the degree of Associate in Arts and preparing for admission to candidacy for the degree of Bachelor of Arts. One is for students interested in a broad general education. The other curriculum prepares students for work in the field of Business Administration during the last two years of college.

The rules and regulations as stated in the Junior College section of the general catalogue of the University apply to Associate in Arts candidates in the College of General Studies, with the exception of specific modifications stated in this bulletin.

Degree candidates must complete a minimum of 50 per cent of their work off-campus and may complete up to 50 per cent of their work on-campus.

Students who plan to continue working in this College toward the Bachelor's degree must apply to the Dean at the time of filing application for graduation for the degree of Associate in Arts. Forms for this purpose are available at the Office of the Registrar.

After completing the College of General Studies requirements for the degree of Associate in Arts, students may wish to transfer to one of the other schools or colleges within the University, or they may wish to transfer to another institution. However, modifications in admission, advanced standing, and curriculum requirements permitted by the College of General Studies may not be accepted in transfer. Therefore, while registered in the College of General Studies, students should meet the requirements of the college or university to which they wish to transfer. The entrance requirements of the colleges and schools of the University are stated in the general catalogue of the University, which is available at the Office of the Director of Admissions.

Associate in Science

The curriculum leading to the degree of Associate in Science in the field of Physical Sciences is offered at the Naval Engineering Experiment Station, Annapolis, Maryland, by the College of General Studies and on campus by the Junior College. Students who have taken courses in this curriculum at installations where the entire program is not available may, if they meet the entrance requirements, transfer to the Junior College to complete the curriculum.

Requirements for the Degrees of Associate in Arts and Associate in Science

RESIDENCE

At least the last fifteen semester hours required for the degree must be completed while registered as a degree candidate (see page 21) in the College of General Studies. In both the Off-Campus Division and the Campus Division, the 6 semester hours required prior to admission to degree candidacy may be included in the residence requirement, if the courses are approved as part of student's degree program. (See pages 13–14.)

SCHOLARSHIP

The system of grading and computing scholarship is described in detail on pages 18 and 19. For regulations concerning probation, suspension, and readmission, see pages 19 and 20.

CURRICULUM

The satisfactory completion of 60 semester hours of college work in conformity with one of the following curricula is required.

Associate in Arts Curricula

GENERAL CURRICULUM

The following curriculum leads to the degree of Associate in Arts and constitutes the first half of the General Curriculum leading to the degree of Bachelor of Arts. For the second half, see pages 29 and 30.

	Semester Hours
English 1–2: English Composition	6
English 41–42: Introduction to World Literature; 51–52: Introduction to English Literature; 71–72: Introduction to American Literature; or Philosophy 51–52: Introduction to Philosophy	6
*Foreign Language	12
Social Studies: from economics, history, political science, sociology, or Geography 51–52. Six hours in one department are required, unless Political Science 9 and Sociology 1 are satisfied by the GED Tests	6
Science: Chemistry 3–4; Survey of Physical Science, or an introductory course in biology, botany, chemistry, geology, physics, or zoology (if arrangements can be made to offer such courses off-campus)	6 or 8
Elective	22 to 24
Total	60

BUSINESS ADMINISTRATION CURRICULUM

The following curriculum leads to the degree of Associate in Arts in Business Administration and constitutes the first half of the curriculum leading to the degree of Bachelor of Arts with a Major in Business Administration. For the second half, see pages 30 and 31.

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* A student offering for admission four acceptable high school units in one foreign language or two units in each of two foreign languages is not required to take any foreign language. (A unit represents one full year of credit.) If he offers two units only, he must complete the entire second-year college course in the same language or the first-year college course in another language. The usual college requirement is two years of a single language, but since many College of General Studies students may subsequently be stationed abroad, some familiarity with two foreign languages may be particularly useful. Therefore students may take one year each of two different foreign languages. Those who transfer to other institutions will probably have to take two years of one language and should be guided accordingly.

The high school units accepted under the above arrangements remove the college language requirement, but, of course, do not count for college credit.

	Semester Hours
English 1–2: English Composition	6
Accounting 1–2: Introductory Accounting	6
English 11: The Writing of Reports	3
*Foreign Language	12
Economics 1–2: Principles of Economics	6
Political Science 9–10: Government of the United States	6
Speech 1: Effective Speaking	3
Statistics (as approved by the Dean)	6 or 9
Elective (Students interested in Foreign Commerce include Geography 51)	9 or 12
Total	60

Associate in Science Curriculum

This curriculum is designed for part-time students who do not wish to extend their college education beyond 60 semester hours of work. No credit toward the degree will be granted for GED tests, service schools, correspondence schools, or validating examinations. Those interested in continuing the study of physical science toward a Bachelor's degree should consult the Junior College requirements as stated in the general catalogue of the University.

	Semester Hours
Chemistry 11–12: General Chemistry	8
Chemistry 21: Qualitative Inorganic Analysis	4
English 1–2: English Composition	6
English 11: The Writing of Reports	3
†Mathematics 3: College Algebra	3
†Mathematics 6: Plane Trigonometry	3
Mathematics 12: Analytic Geometry	3
Mathematics 19: Differential Calculus	3
Mathematics 20: Integral Calculus	3
Mechanical Engineering 3–4: Graphical Communication I–II	4
Physics 5, 6, 7, 8: General Physics	12
Physics 55: Physical Measurements	3
Electives (Speech 1: Effective Speaking (3) and Economics 1–2: Principles of Economics (6) are recommended)	5–11
Total	60

BACHELOR OF ARTS

The College of General Studies offers curricula leading to the degree of Bachelor of Arts in: (1) the General curriculum, (2) Business Administration, and (3) major fields available to students in Columbian College or the School of Government. Many courses required for Co-

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[*] See footnote on page 26.

[†] The Mathematics 3 requirement may be satisfied by two years of acceptable high school alge- a; the Mathematics 6 requirement, by one-half year of high school trigonometry.

lumbian College and School of Government majors are available only on campus.

Requirements for Admission to Candidacy

The degree of Associate in Arts in the College of General Studies, or the equivalent, and the permission of the Dean (see pages 13–14) are required. Admission to Bachelor's candidacy after receiving the degree of Associate in Arts is not automatic. With the permission of the Dean, students with limited deficiencies in the requirements for admission may be conditionally admitted to degree candidacy while they make up academic deficiencies.

Students with acceptable college records from other institutions must complete 6 semester hours, with the grade of *C* or better, before applying for degree candidacy.

Students with questionable previous college records may be accepted on probation to complete 24 semester hours, with the grade of *C* or better, before final consideration of degree candidacy.

A conference concerning plans for study is required of each applicant for admission to candidacy. Appointments may be made with the Assistant Dean or the Director of the Off-Campus Division by telephone (STerling 3-0250, Extension 441 or 487) or by letter.

ADVANCED STANDING

Advanced standing may be obtained in the following ways:

1. By transfer of acceptable credits from another college or university. To be acceptable, transferred credits must be for courses approved for the curriculum and of grade *C* or higher.

2. By validating examinations, service schools, and correspondence courses. From any combination of these sources, the maximum credit that may be obtained is 15 semester hours. The maximum credit obtained from any one of these sources may not exceed that stated on pages 14–15. No credit may be obtained in this way, however, if students have been credited with the maximum of 30 semester hours toward the degree of Associate in Arts.

In addition to the 15 hours of credit, GED tests may be used to satisfy the prerequisite course requirements on the Associate in Arts level with the exception of those in departmental majors.

Requirements for the Degree

Degree candidates in the Off-Campus Division must complete at least 50 per cent of the work taken at this University in off-campus courses.

RESIDENCE

The last 30 semester hours, including at least 12 hours in the major field, must be completed in residence in the College, unless special permission is granted by the Dean to take work elsewhere. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Summer work and the 6 hours required prior to admission to degree candidacy (if approved as part of the degree program) may be counted in residence, but in no case may the period of residence aggregate less than 30 weeks. For regulations governing military students who are transferred when they are within 6 semester hours of their degree, see page 21.

Transfers.—Transfer students from other universities who have partially or substantially met the major requirements are required to complete satisfactorily 12 semester hours of approved work in the major field in the College of General Studies in order to receive a Bachelor's degree. This work will count as part of the minimum residence requirement. (For regulations concerning transfer within the University, see page 20.)

SCHOLARSHIP

The system of grading and computing scholarship is described in detail on pages 18 and 19. For regulations concerning probation, suspension, and readmission, see pages 19 and 20.

To remain in good standing, a student must maintain a general quality-point index of 2.00 and a quality-point index of at least 2.50 in his major.

CURRICULUM

The satisfactory completion of 60 semester hours of college work beyond the requirements for the degree of Associate in Arts and the satisfactory completion of one of the following curricula are required.

Bachelor of Arts Curricula

GENERAL CURRICULUM

This curriculum provides a flexible program of general education based on the student's objectives or employment responsibilities and aims.

Students planning to work toward a Master's degree in Columbian College, the School of Government, or the School of Education are advised to plan their programs of study toward the Bachelor's degree so that they will meet the prerequisite requirements of the school or college of their choice.

Candidates for the degree of Bachelor of Arts registered in the General curriculum select one of the following divisions as a major and another as a minor:

1. *The Division of Languages and Literatures.*—The departments of Classical Languages and Literatures, English, Germanic Languages

and Literatures, Journalism, Romance Languages and Literatures, and Slavic Languages and Literatures.

2. *The Division of Mathematics and Physical Sciences.*—The departments of Chemistry, Geology, Mathematics, Physics, and Statistics.
3. *The Division of the Natural Sciences.*—The Departments of Bacteriology, Biology, Botany, Physiology, Psychology, and Zoology.
4. *The Division of the Social Sciences.*—The departments of Accounting, Business and Public Administration, Economics, Education, Geography, History, Philosophy, Political Science, Religion, Sociology, and Speech.

Major division (Courses to be selected, with the approval of the adviser, from the major division. Eighteen of the required 24 hours must be in courses with departmental numbers above 100.)	24
Minor division (Courses to be selected, with the approval of the adviser, from the minor division.)	12
Electives	24
Total (of which at least 30 semester hours must be in courses with departmental numbers above 100)	60

DEPARTMENTAL MAJOR

Students who elect a major of the type offered in Columbian College and the School of Government should consult the University catalogue for the major requirements. Any deviation from these curricula must be approved by the Executive Officer of the department concerned and the Dean of the College of General Studies.

BUSINESS ADMINISTRATION CURRICULUM

Faculty Adviser: James Carlton Dockeray, Ph.D., Professor of Finance and Executive Officer of the Department. Building M. Room 10 (716 Twenty-first Street NW.); STerling 3-0250, Extension 512.

Acct. 193 Business Budgeting (Formerly 155)	3
Bus. Adm. 101: Business Organization and Combination	3
Bus. Adm. 102: Business Management	3
Bus. Adm. 105: Personnel Management in Industry	3
Bus. Adm. 131: Business Finance	3
Bus. Adm. 141: Principles of Marketing	3
Bus. Adm. 161: Commercial Law: Contracts, Sales, Agency, and Bailments	3
Bus. Adm. 162: Commercial Law: Negotiable Instruments, Property, Mortgages	3
Bus. Adm. 198: Problems in Business Management	3
Econ. 121: Money and Banking	3
Group Option....(To be selected from one of the following groups)	15
*Electives	15
Total	60

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* To be selected in consultation with the Executive Officer of the Department of Business and Public Administration.

Group Option.—The selection of the option and the courses (15 semester hours) to be taken in it must be made in consultation with the faculty adviser. Normally no more than 6 semester hours may be taken in an option other than the one selected. Consent of the adviser must be obtained if the student wishes such modification of his option group.

Group I—General Business

This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, Economics, and Statistics.

Group II—Personnel Management

This group option is made up of selected courses offered by the departments of Business and Public Administration, Economics, Psychology, Speech, and Statistics.

Group III—Finance

This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, Economics, Political Science, and Statistics.

Group IV—Marketing

This group option is made up of selected courses offered by the departments of Business and Public Administration, Economics, Geography, and Statistics.

Group V—Controllership

This group option is made up of selected courses offered by the departments of Accounting, Business and Public Administration, and Economics.

Group VI—Economics

This group option is made up of selected courses offered by the departments of Economics and Business and Public Administration.

Group VII—Statistics

This group option is made up of selected courses offered by the Department of Statistics.

Group VIII—Transportation and Public Utilities

This group option is made up of selected courses offered by the departments of Business and Public Administration, Economics, Geography, History, and Statistics.

Foreign Commerce.—Business Administration majors who wish to specialize in foreign commerce may request a modification of the above requirements. The modified major excludes some of the above required courses and adds others, such as a third year of foreign language, foreign markets, exporting and importing, economic geography, and other courses relating to overseas trade. Each program must be approved by the adviser.

BACHELOR OF SCIENCE IN CARTOGRAPHY

The College of General Studies offers a four-year curriculum designed to prepare students for the degree of Bachelor of Science in Cartography.

Entrance Requirements

The entrance requirements are the same as those stated on pages 13–14, with the exceptions noted below under "Advanced Standing."

ADVANCED STANDING

Twenty-four semester hours of credit may be granted upon the successful completion of validating examinations. No credit will be given for GED tests, correspondence schools, or service school courses.

Requirements for the Degree

The residence and scholarship requirements for the degree of Bachelor of Science in Cartography are the same as those stated above for the degree of Bachelor of Arts.

CURRICULUM

Faculty Adviser: Harland Walter Westermann, A.M., Assistant Professor of Geography. Building I, Room 301 (2135 G Street, NW.) STerling 3-0250, Extension 287 or 298.

To be recommended by the faculty for graduation, candidates for the degree of Bachelor of Science in Cartography are required to complete the following curriculum of 128 semester hours.

Eng. 1–2: English Composition	6
Eng. 11: The Writing of Reports	3
Social Studies: (any two of the following two-semester courses)	12
Econ. 1–2: Principles of Economics (3–3)	
Hist. 39–40: The Development of European Civilization (3–3)	
Hist. 71–72: The Development of the Civilization of the United States (3–3)	
Pol. Sc. 9–10: Government of the United States (3–3)	
Soc. 1–2: Man in Modern Society (3–3)	
Geol. 105–6: Fundamentals of Geophysics	6
Phys. 5: General Physics	3
Phys. 7: General Physics	3
Stat. 91–92: Principles of Statistical Methods I and II	6
Math. 12: Analytic Geometry	3
Math. 19: Differential Calculus	3
Math. 20: Integral Calculus	3
Math. 155: Elements of Geodesy	3
Math. 156: Geodetic Astronomy	3
CE 12: Surveying	3
CE 13: Higher Surveying	3
CE 17–18: Elementary Photogrammetry	6
EE 11: Electric Circuits	3
EE 102: Engineering Electronics	3
ME 4: Graphical Communication II	2
Geog. 51: Introduction to Geography	3
Geog. 113: Geomorphology	3
Geog. 114: Weather and Climate	3
Geog. 132: Land Use	3
Geog. 171: Field Geography	3
Geog. 176: Photo Geography	3
Cart. 1: Map Interpretation	3
Cart. 2: Air Photo Interpretation	3
Cart. 100: Map Drafting and Design	3
Cart. 110: Map Projections	2
Cart. 111: Map Reproductions	1
Cart. 175: Map Compilation	3

Cart. 191–92: Map and Chart Construction	6
Cart. 195: Cartographic Problems	3
Electives	12
Total	128

MASTER OF ARTS

Curricula in the fields of Controllership, Governmental Administration, and Personnel Management have been established by the College of General Studies to meet the needs of adults with succssful work experience who find it essential to take most of their graduate studies off-campus. This program is available in the Main Navy Building and at the Pentagon and will be offered elsewhere as the demand warrants. Additional curricula will be established when the need becomes apparent.

All the work in these three curricula may be taken off-campus. If it should become necessary, up to 50 per cent of the courses may be taken on campus. In all cases the University standards for graduate study are maintained.

Graduate students who plan to work toward a Master's degree in another school or college of the University may enroll for graduate courses in the Off-Campus Division, with the approval of the dean of the school or college concerned. In the School of Government and the School of Education, a maximum of 6 hours of approved off-campus work will be accepted at the time of matriculation for the degree and 6 additional hours of approved courses will be permitted off-campus after matriculation.

Counseling Service

An advisory service, which is the joint responsibility of the agency sponsoring the program and the University, is available to all Master of Arts candidates. Regular members of the Faculty of the University are available as curriculum advisers in the various specialized fields.

Requirements for Admission to Degree Candidacy

To be admitted to degree candidacy the applicant must have (1) an approved Bachelor's degree (120 semester hours, which conform essentially to the requirements for a Bachelor's degree in the College of General Studies) from an accredited higher institution; (2) credit (totaling 6 semester hours), with the grade of *B* (undergraduate) or *Sat.* (graduate), for two courses approved by the academic adviser and taken in the College of General Studies prior to admission to candidacy; and (3) a quality-point index of 3.00 (*B*) in the undergraduate major. If the applicant's work history gives evidence of more competence than his previous academic record indicates, he may be admitted to candidacy on the basis of satisfactory completion of 12 semester hours of work approved by his academic adviser, acceptable results of scholastic aptitude tests, or both.

ADVANCED STANDING

A maximum of 6 semester hours of advanced standing may be credited toward the degree by transfer of credit for approved graduate work taken at an accredited college or university.

Requirements for the Degree

RESIDENCE

Of the 30 semester hours of graduate work required for the degree, a minimum of 24, which may include the thesis (6 semester hours), must be completed while registered as a degree candidate in the College of General Studies, except in the case of transfers within the University, who are required to have 12 hours of residency in the College of General Studies as degree candidates.

SCHOLARSHIP

The grade of at least "Satisfactory" in all courses is required.

A student whose scholarship is unsatisfactory may be suspended by the Dean upon recommendation of the faculty adviser and the approval of the Committee on Scholarship. A Master's candidate who accumulates 9 semester hours or more of "Unsatisfactory" (including grades of "C" or lower in the prerequisite courses) will be automatically suspended. For information concerning the system of grading, see page 18.

THESIS

With the approval of the adviser, a thesis may be substituted for six hours of elective credit.

1. The thesis subject must be approved by the director of the thesis and the faculty adviser and presented to the Dean not later than the date announced in the calendar.

2. The typewritten thesis in its final form must be approved by the director of the thesis and the faculty adviser and presented to the Dean not later than the date announced in the calendar.

3. Three typewritten copies of the thesis are required, one original and two legible and complete carbon copies. Detailed instructions for the styling of the thesis should be obtained from the Dean.

4. Accepted theses, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in the thesis must be secured from the Dean.

COURSE SUBSTITUTION

Written approval of the faculty adviser and the Dean is required for any course substitution in an established program. Forms for requesting course substitution are available at the College of General Studies.

COMPREHENSIVE EXAMINATIONS

The Master's candidate is required to pass a written Comprehensive Examination. At the time of the examination he may be required to submit to the examination committee copies of articles published, pertinent staff studies, reports, etc., prepared during the period of graduate study, as additional evidence of Master of Arts competency.

Master of Arts Curricula

CONTROLLERSHIP

Faculty Adviser: Arlin Rex Johnson, Ph.D., Professor of Business Administration. Hall of Government, Room 206; STerling 3-0250, Extension 493.

A. Prerequisites

In addition to the general requirements for admission to candidacy for the degree of Master of Arts, candidates are expected to have an undergraduate background in the social sciences. Students lacking this academic background may, with the approval of the adviser, substitute work experience. At least one approved course in each of the following fields is required: Accounting, Business and Public Administration, Economics, and Political Science. Additional course work may be prescribed.

B. Required Courses

	Semester Hours
Acct. 211–12: Managerial Accounting	6
Bus. Adm. 261: Seminar in Advanced Management	3
Bus. Adm. 268: Management Engineering	3
Bus. Adm. 296: Seminar in Controllership	3
Psych. 145: Principles of Human Relations	3
Pub. Adm. 213: Administration in Government	3
Pub. Adm. 251: Governmental Budgeting (Formerly Accounting 241)	3
Pub. Adm. 252: Planning and Administering the Agency Program (Formerly Accounting 242)	3
Stat. 101: Basic Principles of Statistical Methods	3
	30

C. Electives

A student whose previous academic preparation makes it unnecessary for him to take all the prescribed courses in this program may substitute elective courses, with the written approval of his faculty adviser. Electives may be selected from the Governmental Administration or the Personnel Management Master's program. In exceptional cases, the faculty adviser may approve other courses as electives. Also included among the possible electives in Business Administration 299–300: Thesis* 6

GOVERNMENTAL ADMINISTRATION

Faculty Adviser: David Springer Brown, Ph.D., Professor of Public Administration. Hall of Government, Room 205; STerling 3-0250, Extension 404 or 540.

A. Prerequisites

In addition to the general requirements for admission to candidacy for the degree of Master of Arts, candidates are expected to have an undergraduate background in the social sciences or business administration. Students lacking this academic background may, with the approval of the adviser, substitute work experience. At least one approved course in each of the following fields is required: Business and Public Administration, Political Science, Economics, and Psychology. Additional course work may be prescribed.

B. Required Courses

	Semester Hours
Bus. Adm. 268: Management Engineering	3
Psych. 146: Problems in Human Relations	3
Pub. Adm. 210: The Management Function	3
Pub. Adm. 213: Administration in Government	3
Pub. Adm. 231: Public Personnel Management	3
Pub. Adm. 237: Intermediate Management and Supervision	3
Pub. Adm. 251: Governmental Budgeting (Formerly Accounting 241)	3
Pub. Adm. 252: Planning and Administering the Agency Program (Formerly Accounting 242)	3
Pub. Adm. 260: Policy Formulation and Administration	3
Elective	3
Total	30

C. Electives

In addition to the elective of 3 semester hours listed above, a student whose previous academic preparation makes it unnecessary for him to take all the prescribed courses in this program may substitute elective courses, with the written approval of his faculty adviser. Electives may be selected from the courses listed under the Controllership and Personnel Management Master's programs. In exceptional cases, the faculty adviser may approve other courses as electives. Also included among the possible electives is Public Administration 299–300: Thesis* 6

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* Business Administration 299 is a thesis seminar offered only on campus.

PERSONNEL MANAGEMENT

Faculty Adviser: Herbert Hubben, M.S., Associate Professor of Public Administration. Room 31, Building P, 2108 G Street NW.; STerling 3-0250, Extension 588.

A. Prerequisites

In addition to the general requirements for admission to candidacy for the degree of Master of Arts, candidates are expected to have an undergraduate background in the social sciences. Students lacking this academic background may, with the approval of the adviser, substitute work experience. At least one approved course in each of the following fields is required: Economics, Political Science, Psychology, and Statistics. Additional course work may be prescribed.

B. Required Courses

	Semester Hours
Psych. 144: Personnel Psychology	3
Psych. 246: Seminar: Personnel Measurement Techniques (Prerequisite: Psych. 144, and an elementary course in Statistics)	3
Pub. Adm. 213: Administration in Government	3
Pub. Adm. 231: Public Personnel Management	3
Pub. Adm. 232: Personnel Procedures and Problems	3
Pub. Adm. 237: Intermediate Management and Supervision	3
Electives	12
Total	30

C. Electives

Electives should be selected after consultation with the faculty adviser. They should be selected from such courses as the following, which will be provided off-campus according to the polled interests of the students:

Bus. Adm. 286: Management in the Armed Forces	3
Econ. 241: Labor Economics	3
Econ. 244: Collective Bargaining (Formerly, Labor Relations)	3
Psych. 127: Employee Counseling	3
Psych. 146: Problems in Human Relations	3
Psych. 245: Seminar: Employee Motivation and Morale	3
Psych. 247: Applications of Behavioral Research Methods to Personnel Management	3
Pub. Adm. 233: Employee Development and Utilization	3
Pub. Adm. 251: Governmental Budgeting (Formerly Accounting 241)	3
Pub. Adm. 260: Policy Formulation and Administration (Formerly Political Science 257)	3
Speech 121: Group Discussion and Conference Leadership	3

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* Public Administration 299 is a thesis seminar offered only on campus.

Also one of the following courses may be used as an elective depending on the interest and background of the candidate:

Bus. Adm. 299–300: Thesis*	6
Psych. 299–300: Thesis	6
Pub. Adm. 299–300: Thesis*	6

OFF-CAMPUS CENTERS

The College of General Studies, through its Off-Campus Division, has offered programs in the various governmental and Armed Forces Installations listed below.

Department of Defense

THE PENTAGON, WASHINGTON 25, D. C.

After-Hours Training Program: Russell W. Millar, Coordinator for the Univeristy
Room: Reception Center on the Concourse
Telephone: LIberty 5–6700, Extension 73141
STerling 3–0250, Extension 487, 441
Type of Course Offered: Undergraduate courses leading to the Associate in Arts and the Bachelor of Arts degrees; graduate program leading to the Master of Arts degree in the fields of Controllership, Governmental Administration, and Personnel Management
Length of Courses: Fifteen weeks in Fall and Spring semesters; eight weeks in the Summer Sessions. Restricted to military and civilian personnel of the Department of Defense

Department of the Air Force

LANGLEY AIR FORCE BASE, VIRGINIA

Educational Consultant: Robert J. Dewey
Building: T-238
Telephone: Hampton 7911, Extension 24120
Coordinator for the University: Russell W. Millar
Telephone: STerling 3–0250, Extension 441
Type of Course Offered: Undergraduate program leading to Associate in Arts and Bachelor of Arts degrees
Length of Courses: Eight weeks
Open to military and civilian employees of the Air Force and to other government employees, by permission of the Commanding Officer of Langley Air Force Base

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* Business Administration 299 and Public Administration 299 are theses seminars offered only on campus.

Department of the Army

ARMY MAP SERVICE, WASHINGTON 25, D. C.

Training Officer: Miss Frances Hanson
Building: 7, Room 106, 6500 Brooks Lane NW.
Telephone: OLiver 4–4350, Extension 568
Coordinator for the University: Russell W. Millar
Telephone: STerling 3–0250, Extension 441
Type of Course Offered: Special courses for in-service training program
Length of Courses: Fifteen weeks
Restricted to personnel of the Army Map Service

ARMY SECURITY AGENCY, ARLINGTON, VIRGINIA

Educational Adviser: Raymond Brogan
Building: T-300
Telephone: JAckson 5–5800, Extension 772
Coordinator for the University: Alexander G. Rose III
Telephone: STerling 3–0250, Extension 487
Type of Course Offered: Undergraduate program leading to the Associate in Arts and the Bachelor of Arts degrees
Length of Courses: Eight and fifteen weeks
Open to employees of the Army Security Agency

FORT BELVOIR, VIRGINIA

Educational Adviser: Emmerick Eber
Building: B-2
Telephone: EDgewater 9–5500, Extension 27154
Coordinator for the University: Russell W. Millar
Telephone: STerling 3–0250, Extension 441
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts, Bachelor of Arts, and Bachelor of Science in Cartography; and courses leading to the degree of Master of Engineering Administration in the School of Engineering of the University
Length of Courses: Eight and fifteen weeks
Open to military and civilian employees of the Army and to other government employees, by permission of the Commanding Officer of Fort Belvoir

FORT MONROE, VIRGINIA

Educational Consultants: Robert J. Dewey
Building: T-238 (Langley Air Force Base)
Telephone: Hampton 7911, Extension 24120

Paul Rahenkamp
Building: Education Center
Telephone: Hampton 7972, Extension 22254
Coordinator for the University: Russell W. Millar
Telephone: STerling 3–0250, Extension 441
Type of Course Offered: Undergraduate program leading to Associate in Arts and Bachelor of Arts degrees
Length of Courses: Eight weeks
Open to military and civilian employees of the Army and to other government employees, by permission of the Commanding Officer of Fort Monroe

FORT MYER, VIRGINIA

Educational Adviser: Miss Margaret Lockwood
Building: Post Education Center, Building 604, South Area
Telephone: JAckson 7–9400, Extension 268
Coordinator for the University: Alexander G. Rose III
Telephone: STerling 3–0250, Extension 487
Type of Course Offered: Undergraduate program leading to the Associate in Arts and the Bachelor of Arts degrees
Length of Courses: Eight and fifteen weeks
Open to military and civilian employees of the Army and to other government employees, by permission of the Commanding Officer of Fort Myer

Department of the Navy

MAIN NAVY BUILDING, WASHINGTON 25, D. C.

Training Officers: George D. Thomas, Head, Training Branch, DCPD; Frank S. Caracciolo, Head, Professional and Academic Programs Section; Miss Kathleen V. Sullivan, Training Specialist
Building: Main Navy Building, Room 1115, Constitution Avenue at 18th Street NW.
Telephone: LIberty 5–6700, Extension 66155
After-Hours Training Program: John A. Timour, Coordinator for the University. Telephone: STerling 3-0250, Extension 488
Type of Course Offered: Undergraduate courses leading to the Associate in Arts and the Bachelor of Arts degrees; graduate program leading to the Master of Arts degree in the fields of Controllership, Governmental Administration, and Personnel Managament; and courses leading to the degree of Master of Engineering Administration in the School of Engineering of the University
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Department of Defense

BUREAU OF NAVAL PERSONNEL, WASHINGTON 25, D. C.

Training Officers: Cmdr. B. F. Worchester, Head, Officer Training Section; DeWitt Fisher, Deputy Head
Building: Arlington Annex, Room 3713
Telephone: LIberty 5–6700, Extension 42403 or 42776
Coordinator for the University: John A. Timour
Telephone: STerling 3–0250, Extension 488
Type of Course Offered: Special Courses in Human Relations and Management and Public Speaking for Naval Personnel
Length of Courses: Fifteen weeks
Open to military personnel on active duty in the Department of the Navy by quota assigned to the various bureaus and offices, and to civilian employees of the Department by permission

BUREAU OF SHIPS, WASHINGTON 25, D. C.

Training Officer: Mrs. Edna K. Trudeau
Building: Main Navy Building, Room 2438, Constitution Avenue at 18th Street NW.
Telephone: LIberty 5–6700, Extension 62927
Coordinator for the University: John A. Timour
Telephone: STerling 3–0250, Extension 488
Type of Course Offered: Graduate program leading to the Master of Arts degree in the fields of Controllership, Governmental Administration, and Personnel Management; and courses leading to the degree of Master of Engineering Administration in the School of Engineering of the University
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Department of Defense

BUREAU OF YARDS AND DOCKS, WASHINGTON 25, D. C.

Training Officers: William L. Meyers, Head, Training Section; Robert J. Wilson, Training Officer
Building: Yards and Docks Annex, Room 2-A-72, Memorial Drive and H Road, Arlington, Va.
Telephone: LIberty 5–6700, Extension 64847
Coordinator for the University: John A. Timour
Telephone: STerling 3–0250, Extension 488
Type of Course: Graduate program leading to the Master of Arts degree in the fields of Controllership, Governmental Administration, and Personnel Management; and courses leading to the degree of Master of Engineering Administration in the School of Engineering of the University

Length of Courses: Fifteen weeks

Open to military personnel and civilian employees of the Department of Defense

DAVID TAYLOR MODEL BASIN, CARDEROCK, MARYLAND

Training Officer: William H. Struhs, Jr., Head, Training Branch

Building: 13, Room 202

Telephone: OLiver 4–2600, Extension 394

Coordinator for the University: John A. Timour

Telephone: STerling 3–0250, Extension 488

Type of Course Offered: Special in-service training courses arranged by the Training Officer

Length of Courses: Fifteen weeks

Open to military personnel and civilian employees of the David Taylor Model Basin, and to other government employees, by permission of the Commanding Officer of the installation

NATIONAL NAVAL MEDICAL CENTER, BETHESDA, MARYLAND

Information and Education Officer: Lt. (j.g.) Carol J. MacLean, USNR

Building: 102, Information and Education Office

Telephone: OLiver 4–2500, Extension 585

Coordinator for the University: John A. Timour

Telephone: STerling 3–0250, Extension 488

Type of Course Offered: Undergraduate program leading to the Associate in Arts and Bachelor of Arts degrees

Length of Courses: Fifteen weeks

Open to military and civilian personnel of the Navy, employees of the National Institutes of Health, and to other government employees, by permission of the Commanding Officer of the National Naval Medical Center

NAVAL AIR TEST CENTER, PATUXENT RIVER, MARYLAND

Information and Education Officer: Ensign Robert D. Quierolo, USNR

Building 410, Information and Education Center

Telephone: VOlunteer 3-3111, Extension 524, or 595

Coordinator for the University: John A. Timour

Telephone: STerling 3–0250, Extension 488

Type of Course Offered: Undergraduate program leading to the Associate in Arts and Bachelor of Arts degrees

Length of Courses: Fifteen weeks

Open to military and civilian personnel of the Navy and to other government employees and civilians, by permission of the Commanding Officer of the Naval Air Test Center

NAVAL ENGINEERING EXPERIMENT STATION
ANNAPOLIS, MARYLAND

Training Officer: John Sivy
Building: 3-A, Administration Building, Industrial Relations Department
Telephone: Colonial 3–2611, Extension 1210
Coordinator for the University: John A. Timour
Telephone: STerling 3–0250, Extension 488
Type of Course Offered: Courses in undergraduate program leading to the Associate in Arts, Associate in Science, and Bachelor of Arts degrees; pre-engineering courses and graduate courses
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Navy and to other government employees and civilians, by permission of the Commanding Officer of the Engineering Experiment Station

NAVAL GUN FACTORY, WASHINGTON 25, D. C.

Training Officers: Charles A. Trainum, Supervisory Training Officer; Mrs. Agnes Bryan, Training Officer
Building: 172, Second Floor, M at 8th Street SE.
Telephone: LIncoln 7–5700, Extension 2160, 2188, or 2416
Coordinator for the University: John A. Timour
Telephone: STerling 3–0250, Extension 488
Type of Course Offered: Undergraduate program leading to the Associate in Arts and Bachelor of Arts degrees; graduate courses in accounting, administration, and personnel management; special certificate program for supervisors to meet local in-service training needs
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Navy, and to other government employees, by permission of the Superintendent of the Naval Gun Factory

NAVAL HYDROGRAPHIC OFFICE, SUITLAND, MARYLAND

Training Officer: Lester S. Hottle, Director of Training
Building: FOB 3, Room G-121
Telephone: JOrdan 8–9060, Extension 248
Coordinator for the University: John A. Timour
Telephone: STerling 3–0250, Extension 488
Type of Course Offered: Undergraduate program leading to the degrees of Associate in Arts, Bachelor of Arts, and the Bachelor of Science in Cartography
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Navy, employees of

the Census Bureau, and to other government employees in the Department of Defense, by permission of the Naval Hydrographic Office

NAVAL POWDER FACTORY, INDIAN HEAD, MARYLAND

Training Officer: John H. La Francise
Building: D-325, Industrial Relations
Telephone: Riverside 3–2111, extension 260
Coordinator for the University: John A. Timour
Telephone: STerling 3–0250, Extension 488
Type of Course Offered: Undergraduate program leading to Associate in Arts and Bachelor of Arts degrees and graduate courses
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Navy and to other government employees and civilians, by permission of the Commanding Officer of Naval Powder Factory

NAVAL RESEARCH LABORATORY, WASHINGTON 25, D. C.

Training Officers: Paul J. Dunn; William J. McLaughlin, Staff Training Section; Allen W. Philbrick, Science Education Section
Building: 43, Rooms 102 and 111, 4555 Overlook Avenue SW.
Telephone: JOhnson 3–6600, Extension 856 and 858
Coordinator for the University: John A. Timour
Telephone: STerling 3–0250, Extension 488
Type of Course Offered: Undergraduate program leading to the Associate in Science degree
Length of Courses: Fifteen weeks
Open to military and civilian personnel of the Navy at the Naval Research Laboratory and other government employees by permission of the Naval Research Laboratory

UNITED STATES MARINE CORPS SCHOOLS, QUANTICO, VIRGINIA

Education Officer: Lt. Charles A. Pisaturo, USMC
Building: Education Office, Special Services Building, Larson Gymnasium
Telephone: Quantico 1000, Extension 6749
Coordinator for the University: John A. Timour
Telephone: STerling 3–0250, Extension 488
Type of Course Offered: Undergraduate program leading to Associate in Arts and Bachelor of Arts degrees
Length of Courses: Eight and fifteen weeks
Open to military personnel and their dependents and civilian personnel attached to the Marine Corps Schools.

Department of Commerce

MAIN BUILDING, WASHINGTON 25, D. C.

Chief, Employment Division, Office of Personnel Management: Guy H. Dorsey

Building: Department of Commerce Building, Room 5805, 14th Street, Between E Street and Constitution Avenue NW.

Telephone: STerling 3–9200, Extension 602

Coordinator for the University: Alexander G. Rose III

Telephone: STerling 3–0250, Extension 487

Type of Course Offered: Undergraduate program leading to the Associate in Arts and Bachelor of Arts degrees

Length of Courses: Fifteen weeks

Open to all employees of the Department of Commerce and to employees of other government agencies by special arrangement with the Training Officer

BUREAU OF THE CENSUS, WASHINGTON 25, D. C.

Training Officers: John P. Eberle, Chief, Personnel Standards and Development Branch, Personnel Division; Mrs. Dorothy Paul Pritzker, Training Officer (General Field), Personnel Division

Building: FOB 3, Suitland, Maryland

Telephone: LUdlow 4–3000, Extension 525

Coordinator for the University: Alexander G. Rose III

Telephone: STerling 3–0250, Extension 487

Type of Course Offered: Undergraduate courses leading to the Associate in Arts and Bachelor of Arts degrees

Length of Courses: Fifteen weeks

Open to all employees of the Bureau of the Census and the Naval Hydrographic Office, and to other government employees by permission

NATIONAL BUREAU OF STANDARDS, WASHINGTON 25, D. C.

Registrar: Mrs. Leila L. Chapin

Building: The Manse, Room 102, Connecticut Avenue and VanNess Street NW.

Telephone: EMerson 2–4040, Extension 366 or 7400

Coordinator for the University: Alexander G. Rose III

Telephone: STerling 3–0250, Extension 487

Type of Course Offered: Undergraduate program leading to the Associate in Arts and Bachelor of Arts degrees

Length of Courses: Fifteen weeks

Open to all employees of the National Bureau of Standards—also to all employees of government agencies and to all American citizens, providing they meet the formal prerequisites

WEATHER BUREAU, WASHINGTON 25, D. C.

Training Officer: Albert V. Carlin, Chief Training Section
Building: Room 108, Main Administration Building, 24th and M Street NW.
Telephone: ADams 2-3200, Extension 285
Coordinator for the University: Alexander G. Rose III
Telephone: STerling 3-0250, Extension 487
Type of Course Offered: Graduate Courses in Meteorology
Length of Courses: Fifteen weeks
Open to all government employees by permission of the Weather Bureau

Department of Justice

FEDERAL BUREAU OF INVESTIGATION, WASHINGTON 25, D. C.

Special Agent: William E. Clark, Personnel Office
Building: Room 4513, Justice Building, 9th and Pennsylvania Avenue, NW.
Telephone: EXecutive 3-7100, Extension 402
Coordinator for the University: Alexander G. Rose III
Telephone: STerling 3-0250, Extension 487
Type of Course Offered: Undergraduate program leading to the Associate in Arts and Bachelor of Arts degrees
Length of Courses: Fifteen weeks
Open to employees of the Federal Bureau of Investigation only

Melpar, Incorporated

FALLS CHURCH, VIRGINIA

Assistant to Personnel Director: T. L. Wood, Jr.
Building: Central Office Building, Personnel Office, 3000 Arlington Blvd., Falls Church, Virginia
Telephone: JEfferson 4-6000, Extension 287
Coordinator for the University: Alexander G. Rose III
Telephone: STerling 3-0250, Extension 487
Type of Course Offered: Undergraduate and graduate courses in Mathematics
Length of Courses: Fifteen weeks
Open to Melpar employees only

EDUCATION COURSES FOR TEACHERS

Undergraduate and graduate courses for elementary and secondary school teachers have been given by the College of General Studies in coordination with the School of Education in the school systems in the areas listed below. Teachers interested in having a program in Education started in their communities should make their requests known through their Directors of Instruction to Robert W. Eller (STerling 3-0250, Extension 441), Coordinator for The George Washington University of Off-Campus courses in Education.

ALEXANDRIA PUBLIC SCHOOLS

F. F. Brown, Assistant Superintendent for Instruction
Office of the Superintendent
418 South Washington Street
Alexandria, Virginia
Telephone: KIng 9-9100

ARLINGTON COUNTY PUBLIC SCHOOLS

Dr. Joseph B. Johnson, Assistant to the Superintendent
1426 N. Quincy Street
Arlington, Virginia
Telephone: JAckson 2-7700

BERKELEY COUNTY PUBLIC SCHOOLS

James L. Creasy, Superintendent of Schools
Berkeley County Public Schools
Martinsburg, West Virginia
Telephone: Martinsburg 8978

CALVERT COUNTY PUBLIC SCHOOLS

Maurice A. Dunkle, Superintendent of Schools
Prince Frederick, Maryland Telephone: Prince Frederick 76 and 86

FAIRFAX COUNTY PUBLIC SCHOOLS

W. Harold Ford, Assistant Superintendent for Instruction
Fairfax County School Board
Fairfax, Virginia
Telephone: CRescent 3-0910

FREDERICK COUNTY PUBLIC SCHOOLS

Quintin L. Earhart, Assistant Superintendent for Instruction
115 East Church Street
Frederick, Maryland
Telephone: MOnument 2-4191

JEFFERSON COUNTY PUBLIC SCHOOLS

Miss Lucille Heflebower, Supervisor of Instruction
Jefferson County Public Schools
Charles Town, West Virginia Telephone: Charles Town 6

LOUDON COUNTY PUBLIC SCHOOLS

Caleb J. Gibson, Director of Instruction
Mrs. Ruth D. Schulke, Supervisor, Elementary Education
Loudon County School Board
Leesburg, Virginia Telephone: SPring 7-2570

MONTGOMERY COUNTY PUBLIC SCHOOLS

Dr. John A. Permenter, Assistant Superintendent for Instruction
Montgomery County School Board, Box 231
Rockville, Maryland Telephone: POplar 2-3981

PRINCE GEORGES COUNTY PUBLIC SCHOOLS

Miss Rowannetta S. Allen, Assistant Superintendent for Elementary Education
Prince Georges County School Board
Upper Marlboro, Maryland Telephone: REdwood 5-4000

PRINCE WILLIAM COUNTY PUBLIC SCHOOLS

Claude E. DeHaven, Assistant Superintendent for Instruction
Prince William County School Board
Manassas, Virginia Telephone: Manassas 458

ST. MARY'S COUNTY PUBLIC SCHOOLS

Robert S. King, Jr., Superintendent of Schools
St. Mary's County School Board
Washington Street
Leonardtown, Maryland Telephone: GReenwood 5-6171

CAMPUS DIVISION

Degree Program

The Campus Division is designed for promising adults with unusual backgrounds who merit the individual consideration of this Division's experimental approach to admission, advanced standing, curricula, and evaluation of achievement. The criteria for eligibility for admission are stringent in order to limit matriculation to (1) adults well qualified to undertake college work but lacking certain academic requirements for admission to other degree-granting schools and colleges of the University, and (2) adults who, through work experience, have gained broad knowledge and high competency in some area of learning. This knowledge may be validated by special examination to entitle them to advanced standing toward a degree.

Requirements for Admission

The applicant must meet the following requirements:

1. He must be an adult who has already achieved outstanding success in his vocation.

2. He must have completed 12 semester hours of work at The George Washington University while enrolled in courses in the Off-Campus Division, the Division of University Students, or the Division of Special Students, with a grade of at least *C+* (quality-point index of 2.50). The student who has completed a substantial amount of college work elsewhere with excellent grades may apply for admission to degree candidacy after six semester hours at The George Washington University.

3. He must present valid reasons for selecting degree candidacy in the Campus Division of the College of General Studies rather than in another school or college of the University.

4. He must enroll for at least two courses a semester on Campus. Full-time study is encouraged.

The Campus Division offers programs leading to the degrees of Associate in Arts and Bachelor of Arts, as described under the Off-Campus Division, pages 26–27, 29–31.

In cooperation with Columbian College, the School of Education, and the School of Government, the Campus Division makes available programs leading to the degree of Bachelor of Arts with majors in the liberal arts and sciences, education, and government. Requirements for these programs are stated in the general University catalogue under the department of instruction concerned. Students selecting these majors must satisfy the prerequisite course requirements prior to admission to candidacy or as additional work after being admitted.

The program of each student admitted to this Division is carefully planned in consultation with a faculty adviser, who takes into account the student's maturity, background, work experience, and needs.

Armed Forces Section

The Armed Forces Section of the Campus Division was established for those service personnel who wish to study full-time at the University and who have only a limited time under military orders in which to complete their programs of study. Such students register for campus courses through the College of General Studies and remain under its administrative and academic control. By permission of the Dean they may enroll in appropriate courses in the Off-Campus Division.

Military and naval personnel are eligible for admission to this section of the Campus Division if they meet the following requirements:

1. The applicant must be in attendance under official orders which give him a specified time in which to finish his degree requirements.

2. He must prove that the degree requirements can be completed in the time specified in his orders only by taking advantage of the advanced standing provisions of this College.

3. He must be in a position to enroll for full-time study.

By special arrangements with the Department of the Navy, a special naval section of the Armed Forces Section has been established. All naval personnel attend the University as full-time students, ordinarily for five semesters. Campus coordinator and academic adviser: Dr. John Francis Latimer, Building E, Room 300; STerling 3–0250, Extension 494.

The Air Force Advanced Management Program, sponsored by the United States Air Force Institute of Technology, provides 50 semester hours of work in advanced management and supporting fields through the educational facilities of the School of Government for a selected group of Air Force officers. Those officers who qualify, by a combination of academic background and the satisfactory completion of this program can be awarded a Bachelor's degree by the College of General Studies. Campus coordinator and academic adviser: Dr. David Springer Brown, Hall of Government, Room 205; STerling 3–0250, Extension 404 or 540.

For administrative counseling in the College of General Studies, consult Robert Whittington Eller, 706 Twentieth Street NW.; STerling 3–0250, Extension 441.

Regulations

Students in the Campus Division of the College of General Studies are subject to and are expected to familiarize themselves with the regulations of the University stated in the general catalogue, as modified in this Bulletin. Copies of the general catalogue are available at the Office of the Director of Admissions.

Professional In-Service Training

The following programs are offered to meet the in-service needs of special groups. Others will be developed as the need arises.

DIVISION OF COMMUNITY SERVICES

This Division consists of the George Washington University Reading Clinic and a program of popular credit and noncredit courses, institutes, and lectures offered both on campus and off campus.

The Division was organized to provide needed auxiliary educational services and to promote programs designed to supplement the formal educational offerings of the University.

Noncredit courses in a wide variety of subject fields may be set up at the request of any interested group. There are no entrance requirements. The length of each course is determined by the wishes of the sponsoring group and the nature of the subject to be studied.

Civic clubs, church groups, trade associations, parent-teacher associations, and other organizations which are interested in promoting and organizing informal programs of study, setting up conferences, securing assistance in developing their own leadership training courses or institutes, or receiving specialized advice or assistance are invited to consult Mrs. Lillian F. Quigley, Assistant Director of the Division of Community Services of the College of General Studies. Call STerling 3–0250, Extension 441.

Among the courses offered by the Division of Community Services, are the following:

INVESTMENTS

A noncredit course in "How to Invest from $50 to $50,000" is frequently offered in answer to popular demand. Topics include insurance, wills, bank deposits, government bonds, real estate, various types of securities, the New York Stock Exchange, mutual funds, investment advisory services, and the importance of fitting the financial plan to the individual.

WRITING FOR CHILDREN

A noncredit elementary workshop course is offered for beginning writers during the fall semester. An advanced workshop is offered in the spring semester.

BUSINESS AND ECONOMIC ANALYSIS FOR SECRETARIES

Each year, in cooperation with the National Secretaries' Association, a fifteen-week noncredit lecture course is offered in preparation for the Certified Professional Secretary's Examination. The course is generally offered in the spring semester.

MANAGEMENT FOR RESEARCH, DEVELOPMENT, AND TESTING LABORATORIES

This noncredit course is designed to train executives in the development of overall managerial skills. Specific objectives of the course are to give the executives a general familiarity with the tasks, problems, techniques, and methods of management; to relate these general principles to the functioning of their specialized business activities; and to provide them with a forum for discussing common problems and interchanging views, knowledge, and experience.

CHARTERED LIFE UNDERWRITERS PROGRAM

In cooperation with the Chartered Life Underwriters Institute, the College of General Studies has initiated a program of credit courses designed to assist insurance men in preparing for Chartered Life Underwriters' examinations.

HOSPITAL ADMINISTRATION

A credit course of lectures and discussions broadly covering the field of hospital administration is designed especially for those working in hospitals at the executive and department-head level and for those employed in federal hospital programs who deal with various phases of hospital programming and operations.

Topics include the history of hospitals, the scope and organization of voluntary and federal hospital programs, the functional elements of hospitals, with emphasis on the application of modern management tools in Hospital Administration.

NURSING EDUCATION

A credit course in the management of the hospital nursing unit is offered for nurses in the metropolitan Washington area. Emphasis is placed on the relation of the hospital nursing unit to the hospital and community, current concepts and standards in nursing service and their application to unit management, and the development of techniques for the implementation of concepts and policies. Other credit courses in this field are being developed.

INSTITUTE FOR PARENTS

A noncredit "Institute for Parents" emphasizes four areas of study: understanding the gifted child, understanding reading problems, understanding modern school methods, and understanding the early adolescent. The primary objective of the class is to help parents understand their children in relation to themselves as parents, to the school, and to the community. It is planned by the Fairfax County community to make this an annual Institute.

PROGRAM PLANNING FOR ORGANIZATIONS

A noncredit course designed especially for civic and club workers. Among the topics covered are the following: planning individual programs, public relations, the responsibility of leadership, and exploring projects and activities for a particular group.

ADMINISTRATIVE DEVELOPMENT

A noncredit course in techniques of management and instruction is offered as part of the Administrative Development Program of the Office of the Adjutant General, Department of the Army.

ADVANCED INVESTMENT MANAGEMENT

A noncredit course in management is available to those with a basic knowledge of the stock market and investment principles. Topics covered include the selection of stocks most suitable for specific objectives.

AMERICAN SPEECH AND DICTION

This noncredit course available to employees of foreign embassies, includes articulation drills, stress and intonation patterns in "standard" American English, discussion of dialect differences, and vocabulary-building exercises. Individually designed exercises and daily recordings on tape are used.

ELEMENTARY ALGEBRA

A noncredit course in elementary algebra through quadratic equations is designed to prepare students for college algebra.

GOVERNMENTAL ACCOUNTING

This noncredit seminar is designed for students of accounting from other countries. Topics covered include the principles and procedures of budgetary accounting as a tool of management in developing and maintaining budgetary control, a consideration of cost accounting and internal auditing. Each participant's progress, background, and interests determine the level of his study and research.

INTERNATIONAL COOKERY

This noncredit lecture and demonstration course on the basic dishes of various countries illustrates different methods of cooking and characteristic seasonings. Tastiness, low cost, high nutritional value, and availability of ingredients are considered in the choice of recipes.

INTRODUCTION TO PROFESSIONAL WRITING

A noncredit course is offered in the essentials of writing techniques. Manuscripts are submitted for the consideration and criticism of the teacher and class. Analysis is made of magazine writing opportunities for free-lance writers.

PLANNING FOR RETIREMENT

This noncredit course is designed to help men and women plan efficiently for retirement. In ten sessions it covers a constructive program of thought and action for retirement planning, a program which has been used by many of the large business and industrial firms.

PREPARATION OF SUMMARIES

This noncredit course gives training in accurately summarizing classified documents and information in readable form.

THE GROWTH OF POLITICAL PARTIES IN THE UNITED STATES

This noncredit course treats chronologically the growth of American political parties. It underlines those factors in our political history which are relevant to the current party struggle and the future course of politics: the role of party conventions; the importance of party platforms; the influence of particular personalities; the continuance of certain issues; the impact of wars and other disasters; the mechanisms for achieving party victory; and, with special attention, the relationship between minor parties and splinter groups and the fundamental two-party nature of our political system. Parties are considered socially and ethically as well as politically.

ADMISSION AND REGISTRATION

A simplified system of admission and registration is used in noncredit courses.

Such courses are open to any individual interested in enrolling. When a noncredit course is organized at the request of some particular agency or group, admission may be restricted to the students recommended by the sponsoring organization. Classes may be limited in size in order to maintain the standards desired.

FEES

The tuition fees for noncredit courses are determined by the length and nature of the course. See "Fees", pages 15 and 16.

READING CLINIC

The Reading Clinic, Binney Hall, 2018 I Street NW., offers individual diagnostic and corrective services for all levels: primary, elementary, secondary, and adult. In addition, special reading improvement classes are conducted on the high school and adult levels.

A complete diagnosis includes psychological tests and vision, hearing, and dominance tests, as well as the various reading and spelling tests. Results are interpreted, and a written report is presented in conference with the parents or the individual.

The special reading classes for high school students and adults are offered throughout the year at stated intervals. Emphasis is placed on improvement of vocabulary, speed, comprehension, and study skills. Machines such as the tachistoscope, rate accelerator, and controlled reader are used for increasing speed of comprehension.

FEES

Individual Diagnosis	$30.00
Individual Reading Correction	4.00 per hour
Small Groups with common reading difficulties (2 to 8 students)	2.50 per hour
Groups (10–15 students)	2.00 per hour
Materials fee	4.00

All fees for diagnostic and corrective work are payable in advance at the Office of the Cashier. Reading Improvement Course fees are payable in full at the time of registration. For further information, consult Miss Mary E. Coleman, Director, or Mrs. Laura F. McCarty, Assistant Director, Binney Hall, 2018 I Street NW.; STerling 3-0250, Extension 491.

INDEX

A

- Absence, regulations concerning
  - SEE Attendance
- Academic status of the University, 9
- Administration, Officers of, 1
- Administrative Development course, 54
- Administrative Staff, 1
- Admission, 11–15, 49–50, 55–56
- Advanced standing, 13, 14, 28, 31–32, 34
- Advisory system, 24, 33
- Algebra, elementary course, 54
- American Speech and Diction course, 54
- Aptitude tests, 12, 13, 33–34
- Armed Forces Section, Campus Division, 50
- Attendance, 17–18
- Auditing, 11

B

- Business Administration:
  - Associate in Arts curriculum in, 26–27
  - Bachelor of Arts curriculum in, 30–31
- Business and Economic Analysis for Secretaries course, 11

C

- Calendar for 1958–59, ii–iv
- Campus Division, 49–51
- Candidacy for degrees, special requirements:
  - Associate in Arts, 13–14
  - Associate in Science, 13–14
  - Bachelor of Arts, 13–14, 28
  - Bachelor of Science in Cartography, 13–14, 32
  - Master of Arts, 13–14, 33
- Cartography, degree of Bachelor of Science in, 31–33
- Changes in program of studies, 20
- Chartered Life Underwriters program, 53
- Colleges, Schools, and Divisions of the University, 9
- Committees of the College of General Studies, 1–2
- Community Services, Division of, 52–56
- Comprehensive examinations for Master's degree, 35
- Controllership, Master of Arts curriculum in, 35–36
- Concurrent registration, 11
- Cookery, International, course on, 55
- Correspondence courses, 12, 14, 27, 28, 32
- Counseling service, 24, 33
- Course numbers, explanation of, 11
- Course substitution, 35

D

- Dean's Council, 1
- Degrees:
  - Associate in Arts, 24–25, 25–27
    - Business Administration curriculum, 26–27
    - General curriculum, 26
  - Associate in Science, 24, 25–26, 27
  - Bachelor of Arts, 24, 27–31
    - Business Administration curriculum, 30–31
    - Departmental Major, 30
    - General curriculum, 29–30
  - Bachelor of Science in Cartography, 31–33
  - Master of Arts, 33–38
    - In the field of Controllership, 35–36
    - In the field of Governmental Administration, 36–37
    - In the field of Personnel Management, 37–38
- Departmental majors, 30
- Divisional organization, 29–30
- Dropping courses, 20

E

- Education courses for teachers, 47–48
- Entrance requirements, 13–15
  - SEE ALSO UNDER degree concerned
- Examinations:
  - Comprehensive, for Master's degree, 35
  - For waiving curriculum requirements, 15
  - General Educational Development tests, 13, 14, 15, 24, 27, 28, 31–33
  - Graduate Record, iii, iv, 21
  - University aptitude tests, 12, 13, 33–34
  - Validating, 14–15, 15, 27, 28, 31–32, 49

F

- Fees:
  - Application, 15
  - Graduation, 15
  - Payment of, 15–16
  - Reading Clinic, 56
  - Refund of, 16
  - Residence, 15
  - Testing and Counseling Center, 24
  - Tuition 15, 56
  - Validating examination, 14–15

G

General curriculum, 26, 29–30
General Educational Development tests, 13, 14, 15, 24, 27, 28, 31–33
Governmental Accounting course, 54
Governmental Administration, Master of Arts curriculum in, 36–37
Grades, 18–19
Graduate Record Examinations, iii, iv, 21
Graduation:
  Application for, 15, 21
  Requirements, 20–23

H

Honors, 22–23
Hospital Administration course, 53

I

"In residence" status, 15, 21
In-Service Training Program, 10, 51
Institute for Parents, 53
Instruction, Staff of, 3–8
Investment, introductory and advanced courses on, 52, 54

L

Languages and Literatures, Division of, 29–30
Leave of absence, 21
Library privileges, 23
Location:
  College of General Studies Office, 10
  Off-Campus Centers, 38–46
  The University, 9

M

Management for Research, Development, and Testing Laboratories course, 53
Mathematics and Physical Sciences, Division of, 30
Military transfer of students, 21

N

Natural Science, Division of, 30
Nursing Education, courses, 53

O

Off-Campus Centers, 38–46
Off-Campus Division, 10–48
  Admission to course work, 11
  Admission to degree candidacy, 11, 12, 13–14, 28, 32, 33
  Armed Forces Section, 38–46
  Degrees available, 24
  Education courses for teachers, 47–48
  Organization of courses, 10–11
Organization of the College of General Studies

P

Personnel Management, Master of Arts curriculum in, 37–38
Probation, 19
Professional Writing course, 55
Program Planning for Organizations course, 54
Public Law 16 and 894 (Vocational Rehabilitation, 17
Public Law 346 (World War II GI Bill), 17
Public Law 550 (Korean GI Bill), 17
Public Law 634 (War Orphans Educational Act), 16–17

Q

Quality-point Index, 18–19

R

Reading Clinic, 56
Readmission, 19–20
Regulations, 17–23, 51
Residence requirements, 25–26, 28–29, 34
Retirement, course on planning for, 55
Right to change rules, 23
Right to dismiss students, 23

S

Scholarship requirements, 18–19, 21, 26, 29, 34
Service schools, credit for, 12, 14, 27, 28, 32
Social Sciences, Division of, 30
Special Program directors, 1
Staff of Instruction, 3–8
Suspension, 19

T

Testing and Counseling Center, 24
Thesis, 22, 34
Transcripts of record, 13, 23
Transfer:
  From other institutions, 13, 29
  Within the University, 20–21, 28–29

V

Validating examinations, 14–15, 15, 27, 28, 31–32, 49
Veterans Education, 16–17

W

Warnings, 19
Withdrawal, 20
Writing for Children, course on, 52

School of Medicine—Research and Administration Buildings

The George Washington University Hospital and Clinics

THE SCHOOL OF MEDICINE

1958-59

THE GEORGE WASHINGTON UNIVERSITY

BULLETIN

VOL. LVII
No. 1

THE SCHOOL OF MEDICINE

WASHINGTON, D. C.
PUBLISHED IN OCTOBER
MCMLVII
BY THE UNIVERSITY

CONTENTS

Page

Calendar of the School of Medicine vi
The University 1
The Board of Trustees 3
Officers of Administration 4
History and Organization, Academic Status, Location 5
The School of Medicine 7
Faculty and Staff of Instruction 9
Courses of Instruction 63
Anatomy 64
Anesthesiology 66
Bacteriology, Hygiene, and Preventive Medicine 68
Biochemistry 71
Dermatology and Syphilology 73
Medicine 74
Neurology and Neurological Surgery 80
Obstetrics and Gynecology 82
Ophthalmology 85
Otolaryngology 86
Pathology 87
Pediatrics 90
Pharmacology 93
Physical Medicine and Rehabilitation 95
Physiology 96
Psychiatry 98
Radiology 100
Surgery 101
Urology 104
Degrees Conferred, June 5, 1957 107
Students Registered, 1957–58 109
Summaries of Registration, 1957–58 115
Index 117

CALENDAR OF THE SCHOOL OF MEDICINE

1958–59

Date	Day	Occasion
1958		
Fall Semester:		
Sept. 11	Thursday	Registration for the academic year 1958–59
Sept. 15	Monday	Academic year begins
Nov. 11	Tuesday	Veterans Day. Holiday
Nov. 27–29	Thursday through Saturday	Thanksgiving recess
Dec. 22–Jan. 3 ...	Monday through Saturday	Christmas recess
1959		
Jan. 5	Monday	Classes resume
Jan. 19–24	Monday through Saturday	Examination period
Spring Semester:		
Jan. 26	Monday	Classes resume for the spring semester
Feb. 23	Monday	Winter Convocation. Holiday
March 27–28	Friday and Saturday ...	Easter recess
May 18–26	Monday through Tuesday	Examination period
May 31	Sunday	Baccalaureate Sermon
June 3	Wednesday	Commencement
Sept. 10	Thursday	Registration for the academic year 1959–60

THE UNIVERSITY

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The Board of Trustees of the University is composed of the President of the University ex officio and the following persons by election:

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Alvin Edward Parrish, M.D., *Associate Dean of the School of Medicine*
Victor Frederick Ludewig, A.B., B.S., *Administrator of the University Hospital*

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* For the academic year 1957–58.
† On leave of absence fall semester 1957–58.

THE UNIVERSITY

HISTORY AND ORGANIZATION

The idea of a university in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government."

The George Washington University operates under a charter granted by an act of Congress of February 9, 1821, to Columbian College in the District of Columbia. In 1873 the name was changed to "Columbian University" and in 1904 to "The George Washington University".

The University as it is now organized consists of the Junior College, comprising the work of the freshman and sophomore years; Columbian College, the senior college of liberal arts, which offers work leading to the Bachelor's and Master's degrees; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional schools, which include Medicine, Law, Engineering, Pharmacy, Education, and Government; the College of General Studies; the Division of University Students; the Division of Special Students; the Division of Air Science; and the Summer Sessions.

The George Washington University is a privately endowed University located on a well planned campus in the center of Washington within a few blocks of the White House. The government and educational management of the University are vested in a self-perpetuating Board of Trustees, with the President of the University serving as an ex officio member of the Board.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of

University Women and is a member of the College Entrance Examination Board.

The School of Medicine has had continuous approval by the American Medical Association and is a member of the Association of American Medical Colleges. The degree of the School of Medicine is recognized by all State Examining Boards.

LOCATION

The University is in downtown Washington within a few blocks of the White House and the Federal Triangle of Government buildings, which house many of the departments of the Federal Government and such museums of especial interest to medical students as the Smithsonian Institution, the National Museum, and the Botanic Gardens.

THE SCHOOL OF MEDICINE

FACULTY AND STAFF OF INSTRUCTION IN MEDICINE

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MARGARET KATHERINA McCABE, M.D.
Fellow in Medicine (Neoplastic Diseases)

DONALD McKAY, A.B.
Fellow in Biochemistry

ARTHUR MICHAELSON, M.S.
Research Fellow in Pharmacology

NORMELIO NEDEL, M.D.
Fellow in Medicine (Cardiovascular Diseases)

GEORGE BERNARD PELLEU, Jr., B.S.
Teaching Fellow in Bacteriology

EDGAR ELLIOT PELTZ, A.B., M.D.
Fellow in Medicine (Cardiovascular Diseases)

ROBERT SMALLWOOD POOLE, A.B., M.D.
Fellow in Medicine (Cardiovascular Diseases)

ROBERT SANFORD ROZMAN, B.S.
Research Fellow in Pharmacology

STANLEY IRWIN SHERR, B.S.
Sanders Fellow in Biochemistry

HENRY DOUGLAS SPONG, A.B.
Fellow in Bacteriology

DOLORES SUANES TANTOCO, M.D.
Fellow in Anesthesiology

JAMES BLAKE THOMAS, A.B.
Fellow in Anatomy

ERNEST FREDERICK ZIMMERMAN, B.S.
Teaching Fellow in Pharmacology

PAUL LEON ZUBKOFF, A.B.
Sanders Fellow in Biochemistry

ARTURO AGUILAR, M.D.
Assistant in Anesthesiology

DAVID ARBITER, A.B., M.D.
Assistant in Pathology

HENRY KRAUSE BEYE, A.B., M.P.H., M.D.
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EMMETT MONROE COOPER, M.D.
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Assistant in Surgery

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GLORIA ENG, M.D.
Assistant in Pediatrics

ZEKI ERIM, M.D.
Assistant in Radiology

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FELISA GROSPE, D.M.D.
Assistant in Anesthesiology

RICHARD KESLAR HARKCOM, B.S., M.D.
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JOHN WHARTON HARRIS, A.B., M.D.
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ELTON HERMAN, M.D.
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SANG HO JIN, M.D.
Assistant in Anesthesiology

YUTAKA KATOH, M.D.
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Assistant in Radiology

WILLIAM ROBERT O'REILLY, B.S., M.D.
Assistant in Pediatrics

HAROLD HEACOCK ORVIS, Jr., B.S., M.D.
Assistant in Medicine

JOSE MANUEL PARIENTE, M.D.
Assistant in Anesthesiology

CHIN WOO PARK, M.D.
Assistant in Radiology

DEE RICH PARKINSON, M.D.
Assistant in Pathology

ROGER WEST PARKINSON, B.S., M.D.
Assistant in Obstetrics and Gynecology

JOHN FREDERICK PAULY, M.D.
Assistant in Obstetrics and Gynecology

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Assistant in Surgery

BYRON DAVID ROSEMAN, A.B., M.D.
Assistant in Pediatrics

JACOB ROSENWEIG, B.S., M.D., C.M.
Assistant in Surgery

IRWIN WINN ROVNER, A.B., M.D.
Assistant in Obstetrics and Gynecology

LESLIE ELWOOD SANDERS, A.B., M.D.
Assistant in Psychiatry

VICTOR SCHOCKEN, A.B., M.D.
Assistant in Medicine

EDWARD CHARLES SENAY, A.B., M.D.
Assistant in Medicine

LEMAN SERPEN, B.S., M.D.
Assistant in Anesthesiology

ROGER HALL SHANNON, A.B., M.D.
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NELSON MONROE TART, B.S., M.D.
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Assistant in Pathology

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Assistant in Surgery

ELIA VERNAGLIONE, M.D.
Assistant in Anesthesiology

JOSEPHINE VON HIPPEL, B.S., M.D.
Assistant in Medicine

WILLIAM DAVIES WALLACE, JR., B.S., M.D.
Assistant in Obstetrics and Gynecology

ROBERT EDWIN WILLIAMS, M.D.
Assistant in Surgery

TECHNICAL ASSISTANTS

Fred Buttner, *Technician in Physiology*
James Francis Delaney, Jr., *Photographer in Medical School Photographic Laboratory*
Ralph Richard Gray, A.B., *Technician in Biochemistry*
Mervin Analyde Griffin, *Technician in Medicine*
Cayetano Nagac, A.B., *Technician in Pathology*
Jno Deshon Randall, *Technician in Neurology and Neurological Surgery*
Caroline Amelia Woodruff, M.S., *Technician in Anatomy*

PART-TIME TECHNICAL ASSISTANTS

William Charles Branche, Jr., A.B., *Bacteriology, Hygiene, and Preventive Medicine;* Bess Sullivan, A.B., *Medicine;* Selma Klein, *Physiology;* Robert Claude Sullivan, A.B., *Laboratory Assistant in Animal Care*

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Virginia Sutton Ringness, *Departmental Secretary in Obstetrics and Gynecology*
Roberta McQuade Campbell, A.B., *Secretary, Office of the Dean*
Louree Crossfield, A.B., *Secretary, Office of the Dean*
Eleanor Nolan, *Secretary, Office of the Dean*
Mary Frances Coe, *Secretary, Office of the Dean*
Patricia Latinski Wheeler, *Secretary, Department of Anatomy*
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Angus MacIvor Griffin, Ph.D., *Associate Dean of the School of Medicine*
Alvin Edward Parrish, M.D., *Associate Dean of the School of Medicine*

Joseph Hyram Roe, Ph.D., *Professor of Biochemistry*
Leland Wilbur Parr, Ph.D., *Professor of Bacteriology*
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Paul Kenneth Smith, Ph.D., *Professor of Pharmacology*
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Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*
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Ira Rockwood Telford, Ph.D., *Professor of Anatomy*
Paul Calabrisi, Ph.D., *Professor of Anatomy*
Harold Stevens, Ph.D., M.D., *Professor of Neurology*
Charles Adrian Michael Hogben, M.D., Ph.D., *Professor of Physiology*
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Thomas Carlton Thompson, B.S., M.D., *Clinical Professor of Urology*
William Staton Anderson, A.B., M.D., *Clinical Professor of Pediatrics*
Henry Lauran Darner, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*
Robert Henry Barter, B.S., M.D., *Associate Professor of Obstetrics and Gynecology*
Frank Nelson Miller, Jr., B.S., M.D., *Associate Professor of Pathology*

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*The President of the University, the Dean of Faculties of the University, and the Registrar of the University are members of the Faculty.

Joseph Michael LoPresti, B.S., M.D., *Associate Professor of Pediatrics*

Harold George Mandel, Ph.D., *Associate Professor of Pharmacology*

William Stanley McCune, A.B., M.D., *Associate Clinical Professor of Surgery*

James Jerry McFarland, Jr., B.S., M.D., *Associate Clinical Professor of Otolaryngology*

Victor Frederick Ludewig, A.B., B.S., *Administrator of the University Hospital*

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Brian Blades
Angus MacIvor Griffin
Winfred Overholser
Paul Kenneth Smith
Alvin Edward Parrish

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Mary Louise Robbins
Harold George Mandel
Seymour Alpert
Stewart William Bush

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* The President of the University and the Dean of the School of Medicine are members ex officio of all committees.

COMMITTEE ON GRADUATE AND POSTGRADUATE EDUCATION

Thomas McPherson Brown, *Chairman*

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Leon Yochelson	Robert Henry Barter
Alvin Edward Parrish	Victor Frederick Ludewig

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William Newman	Gerald Fred Hungerford
Calvin Trexler Klopp	Jeremiah Keith Cromer

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Irene Gorski Tamagna, *Chairman*

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GENERAL INFORMATION

INTRODUCTION

The School of Medicine of The George Washington University was opened in March 1825. Of the medical schools now in existence in the United States, it is the eleventh in chronological order of founding. The University Hospital and Dispensary were established in 1898 as a part of the organization of the School. The new George Washington University Hospital was opened in 1948, and the Cancer Clinic building was completed in 1954. Additional clinical facilities are used at the District of Columbia General Hospital, Children's Hospital, St. Elizabeths Hospital, and Mt. Alto Veterans Administration Hospital. The School of Medicine maintains close affiliation not only with the various divisions of the University, but also with the numerous medical research and scientific establishments of the Federal Government in the Nation's Capital. Washington provides world renowned library facilities, comprehensive museums, and excellent recreational facilities which are available to students.

OBJECTIVES

The purpose of the School of Medicine is to prepare men and women in the art and science of medicine to meet the health needs of a growing, ever changing society. It is the responsibility of the School of Medicine to provide its students with a systematic plan of instruction in the basic medical sciences; with well guided clinical experience; with opportunities for expression in research; and with a philosophy in keeping with the highest ethics of the profession.

For undergraduates the aims of the School of Medicine are: (1) to select students of superior ability and character, (2) to teach the theoretical principles, laboratory techniques, and clinical applications of the medical sciences, and (3) to provide a diversity of clinical experience through well supervised clerkships in University, public, and federal hospitals providing facilities for all specialized fields of medicine.

The aims of the School of Medicine in graduate and post graduate education are: (1) to provide well planned services for internship and resident training in both general and specialized practices, (2) to direct an expanding program of applied research, integrated with teaching at the School of Medicine, and in keeping with the growth of Washington as one of the world's great centers of medical investigation, and (3) to provide postgraduate instruction in the most recent advances in medicine.

To achieve these objectives the School of Medicine has developed a progressive plan of instruction outlined below and a balanced, comprehensive curriculum. To carry out the program the University seeks to maintain a faculty of adequate size and outstanding ability, making use of facilities which provide exceptional opportunities for research and clinical training.

PLAN OF INSTRUCTION

The curriculum is a progressive one, beginning with basic medical science and expanding to include the more complex aspects of the prevention of disease and care of the sick. The teaching program is organized under the various departments of the School of Medicine. (See "Courses of Instruction", pages 63–104.)

The schedule for the first year begins with an orientation program designed to introduce the new students to the Faculty, to the upperclassmen, and to the environment for their medical education.

During the first week the students meet for informal panel discussions with upperclassmen and members of the Faculty on such subjects as curriculum, medical terminology, use of library facilities, evaluation of scientific evidence, ethics and aims of the medical profession, and student health.

During the first year instruction is given in anatomy, biochemistry, and physiology using the classroom and laboratory facilities of the School of Medicine. Early in their medical careers students are encouraged to participate in research. Practical problems in patient care are introduced at conferences in the University Hospital.

Having completed the preliminary study of structure and function of the normal body, the student progresses in the second year to a consideration of disease processes and mechanisms. The various microbial agents capable of causing disease are studied in the course in microbiology, and the effect of these and other harmful substances upon the body are studied in the course in pathology. The mode of action of the various therapeutic agents is studied in the course in pharmacology. Introductory lectures and demonstrations in the clinical sciences are given during the second semester in order to prepare the student for the responsibilities of the following year.

In the third year the student is assigned to the District of Columbia General Hospital for lectures, conferences, and closely supervised clinical experience. He serves in the various divisions of the hospital assisting in the preparation of clinical records and performing certain clinical laboratory examinations. He learns to carry out the usual ward procedures and to use certain diagnostic and therapeutic instruments. During this period instruction is individual or in small groups. The instructor reviews the student's observations at the bedside and guides him in the development and application of his knowledge.

During the summer period following the third year each student is required to spend eight weeks in one of the clinical facilities of the School of Medicine.

In the fourth year the student's responsibility in the care of hospitalized patients continues and enlarges, but at least an equal part of his time is spent in the study and care of clinic patients. The University Hospital, the District of Columbia General Hospital, Children's Hospital, Mount Alto Veterans Administration Hospital, and St. Elizabeths Hospital provide the student with experience in many fields. In this final year of formal medical education stress is placed upon the total patient and his environment so that emotional and economic as well as physical factors may be considered in the process of restoration of the individual to a state of health and happiness.

Upon satisfactory completion of the four-year course of the School of Medicine, the student is well prepared for graduate training leading to a career in research, medical education, general or specialty practice, or government service.

THE CURRICULUM

Subject	Lecture	Laboratory	Conference	Total
First Year				
Gross Anatomy	112	256	—	368
Embryology and Histology	48	96	—	144
Neuroanatomy	32	64	—	96
Biochemistry	76	180	32	288
Physiology	144	160	32	336
Biostatistics	16	—	—	16
Disaster Medicine	16	—	—	16
Introduction to Medical Psychology	16	—	—	16
Psychopathology	16	—	—	16
Total	476	756	64	1,296
Second Year				
Bacteriology	64	144	16	224
Pathology	60	120	40	220
Pharmacology	80	80	24	184
Physical Diagnosis	16	96*	—	112
Psychiatry	16	48	—	64
Clinical Microscopy	—	48	—	48
Medicine	64	—	—	64
Surgery	48	—	—	48
Hygiene	32	—	—	32
Pediatrics	32	—	—	32
Neurology	16	—	—	16
Obstetrics	16	—	—	16
Psychosomatic Disorders	16	—	—	16
Radiology	16	—	—	16
Forensic Pathology and Medical Jurisprudence	16	—	—	16
Dermatology	16	—	—	16
Total	508	536	80	1,124

* Practical exercises and/or clinics.

THIRD YEAR

Subject	Lecture, Conference, or Clinic	Clerkship	Total
Anesthesiology	16	—	16
Clinical Pathological Conference	32	—	32
Dermatology and Syphilology	16	—	16
Medicine	16	240	256
Medical Laboratory	—	60	60
Neurology	—	60	60
Obstetrics and Gynecology	48	120	168
Ophthalmology	16	—	16
Pediatrics	16	120	136
Physical Medicine	12	—	12
Psychoneuroses	16	—	16
Surgery	61	240	301
Otolaryngology	16	—	16
Admitting and Emergency	—	120	120
Therapeutic Conference	16	—	16
Total	281	960	1,241

SUMMER CLERKSHIP

Medicine, Surgery, Obstetrics and Gynecology *or* Pediatrics—eight weeks between third and fourth years.

FOURTH YEAR

A) Lecture

Subject	Hours
Clinical Pathological Conference	27
Forensic Medicine	12
Pediatrics	27
Public Health Practice	5
Surgical Anatomy	14
Surgical Pathology	8
Total	93

B) Clerkship*

Division	Weeks
Medicine	9
Surgery	9
Obstetrics and Gynecology	6
Pediatrics	6
Cancer Clinic	3
Psychiatry	3
Total	36

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[*] A three-week elective may be substituted for part of the clerkship in the division where the summer clerkship was served.

EQUIPMENT AND FACILITIES

Medical School Building.—The building housing the School of Medicine is a five-story structure with lecture rooms, classrooms, students' rooms, and the following laboratories: anatomy; bacteriology, hygiene, and preventive medicine; biochemistry; pathology; pharmacology; and physiology.

They are fully equipped to enable students to pursue adequately the laboratory courses and to acquire the technical skill necessary in modern clinical and investigative work.

Research and Administration Building.—The Research Building houses special laboratories for graduate and staff research in the departments of Anatomy; Biochemistry; Pharmacology; Physiology; and Bacteriology, Hygiene, and Preventive Medicine. Special facilities are provided for the study of radio-active compounds, for tissue-culture techniques, and for virological procedures. Selected students are invited to participate in certain aspects of the research program either on a volunteer basis or with the support of special Research Scholarships.

On the first floor, the west wing is occupied by a modern medical library; the east wing houses the administrative offices of the School of Medicine. Photographic laboratories and other facilities for audio-visual aids to education are on the second floor.

Medical Library.—The Medical Library in modern, well-equipped quarters on the first floor of 1339 H Street NW., contains 15,500 carefully selected volumes, including the new medical works and the principal medical journals.

Inter-library loan service is maintained with other medical and scientific libraries.

The Medical Library is open from 9:00 A.M. to 10:00 P.M. each class day, Monday through Friday, and from 9:00 A.M. to 5:00 P.M. Saturday.

A branch of the Medical Library is maintained in the University Hospital for the use of the resident physicians, interns, and students. It is open Monday through Friday, 1:00 to 5:00 P.M. and 6:00 to 9:00 P.M. and Saturday, 1:00 to 5:00 P.M.

The George Washington University Hospital.—The 400-bed hospital is staffed and directed by the Faculty of the George Washington University School of Medicine, and it provides excellent clinical opportunity for the instruction of medical students. Virtually every specialty in the fields of medicine and surgery has assigned space and equipment in both the outpatient department and the bed-patient section of this modern hospital.

GOVERNMENT MUSEUMS

The Armed Forces Institute of Pathology, on the grounds of Walter Reed Army Medical Center, affords unexcelled opportunity for study of conditions met in general medicine and surgery as well as those of peculiarly military significance. Its collection of anatomical and pathological specimens comprises material received from all areas of the world and is unequaled in this country. The Museum of Hygiene, the National Museum, the Smithsonian Institution, the Botanic Gardens, and the various collections of the Department of Agriculture all afford opportunity for study of materials of special interest in various areas of Medicine and its allied sciences.

CLINICAL FACILITIES

Students at the George Washington University School of Medicine receive clinical training at the University Hospital, at the new University Cancer Clinic, and at four affiliated hospitals. In the very first year the medical student begins his work in the hospital as well as in the lecture halls and classrooms.

The George Washington University Hospital.—All clinics are under the supervision of the Dean and the chiefs of services. The individual student has direct responsibility to patients under supervision. Clinical and clinical pathological conferences are held in which the history of patients, the physical findings, laboratory records, and the post-mortem pathology when available, are presented and correlated.

The Outpatient Department.—The Outpatient Department has clinical facilities for each Service in the Hospital. Fourth-year students are assigned in rotation by section for clinical instruction in the Outpatient Department.

The George Washington University Cancer Clinic.—This modern building, opened in 1954, houses the Cancer Detection Clinic; the Helen L. and Mary E. Warwick Memorial; and special laboratories for research related to the nature, diagnosis, and treatment of cancer.

The facilities of the Cancer Detection Clinic are used for the teaching of medical students. The diagnosis and treatment of various forms of neoplasms are presented. The results of the treatment of neoplasms are evaluated by follow-up studies.

District of Columbia General Hospital.—Washington's large city hospital has 1,300 beds and an outpatient department in which approximately 88,898 patient-visits are made each year. It provides clinical opportunities in virtually every branch of medicine and surgery.

Children's Hospital.—This is one of the largest and best known hospitals for children in the United States. Medical students receive training and clinical experience in pediatrics with both clinic and inpatient patients.

St. Elizabeths Hospital.—This famous hospital has recently celebrated the 100th anniversary of its founding. This hospital cares for 7,500 patients with virtually every known psychiatric and neurologic disorder. The George Washington University medical students begin their studies in psychiatry in their first year and these studies continue throughout the four years. Much of their clinical instruction in psychiatry and neurology is received at St. Elizabeths, and prominent psychiatrists and neurologists on the St. Elizabeths staff are members of the George Washington University School of Medicine faculty. Additional clinical experience in psychiatry and neurology is gained by students at the George Washington University Hospital Psychiatric Department, in the Outpatient Department of the University Hospital, and special lectures and clinical work in child psychiatry are given in the Psychiatric Department of Children's Hospital.

Mt. Alto Veterans Administration Hospital.—Clinical experience in both medical and surgical subjects is provided at this Veterans Administration hospital.

ADMISSION

Application for Admission

1. Full directions for application will be furnished on request. The applicant should ask the registrar of each college previously attended to send an official transcript of record to the Director of Admissions, The George Washington University, 2029 G Street NW., Washington 6, D. C. Photostatic copies of credentials without the original signature of the certifying authority are not satisfactory. It is the responsibility of the applicant to see that all credentials are forwarded to the Director of Admissions of the University.

2. Two recent photographs, with signatures, are required of each applicant.

3. Applicants for admission are required to take the Medical College Admission Test, sponsored by the Association of American Medical Colleges, in advance of the academic year for which application is made.

4. A fee of $10 to defray the costs of completing the records for final consideration for admission must accompany each application.

Entrance Requirements

College Courses

Chemistry:	
Inorganic (including 4 hours of laboratory)	8
Qualitative analysis may be counted as part of this requirement.	
Organic (including laboratory)	6-8
The equivalent of a one-year college course	
Biology (including 4 hours of laboratory)	8
A course in either general biology or zoology	
Physics (including at least 2 hours of laboratory)	8
English Composition and Literature	6

With the exception of these specific requirements applicants are urged to follow their personal interests in developing their premedical courses of study. A well-balanced program, rather than a specific field, is the criterion by which an applicant is judged. It is not advisable to take courses that appear to cover subject matter in the medical program.

While well-qualified candidates are eligible for admission after completing the minimal 90 semester-hour requirement, the majority of applicants are found to be better qualified for the study of medicine after four years of college work.

Medical College Admission Test

All applicants are required to take the Medical College Admission Test.

ADVANCED STANDING

A student who has satisfactorily completed one or two years at any other medical school approved by the Association of American Medical Colleges and the American Medical Association, and who has the necessary preliminary educational requirements, may apply for advanced standing.

SELECTION PROCEDURE

The Committee on Admissions is guided in the selection of students by the applicant's academic ability, the results of the Medical College Admission Test, and personal qualifications as determined by letters of reference and personal interview. Applicants are interviewed only by invitation of the Committee.

Each applicant is notified as soon as possible after the Committee makes a decision.

An applicant who is offered a place in a class is required to notify the Director of Admissions within two weeks of his intent to accept the place reserved for him and to remit a deposit of $100 not later than January 15th prior to the opening of classes of the academic year for which he applied. This deposit will not be refunded after January 15th. It will be credited toward the tuition for the first semester.

REGISTRATION

For the academic year 1958–59, registration will be conducted at the Medical School, 1335 H Street NW., from 10:00 A.M. to 4:00 P.M., September 11. Registration is for a period of one academic year.

FEES AND FINANCIAL REGULATIONS

The following fees have been adopted:

Tuition fee, for each academic year	$950.00
Fee for special examinations, for each subject	5.00
Graduation fee	25.00

Payment of Fees

Fees for the year are $950, payable in two installments of $475 each in advance of the beginning of each semester.

All fees are payable at the Office of the Cashier of the University, 725 Twenty-first Street NW., except as some other arrangement may be announced. Amounts due must be paid on or before registration day for the fall semester and on or before such date as may be announced by the Office of the Treasurer for the spring semester.

Registration in the School of Medicine *is for the full academic year.* After a student has entered the course of instruction he is obligated for the full tuition. Acceptance by the School of Medicine of a student's fees does not in any way obligate the School to accept the student for any subsequent year and the right is reserved to require the withdrawal of any student whenever, in the interest of the student or the School, the Faculty deems it advisable to do so.

Cost of Textbooks and Student Equipment

The minimum cost of necessary textbooks and student equipment (microscope, drawing materials, glass slides, clinical thermometer, stethoscope, hemocytometer, uniforms, etc.) is approximately as follows: first year, $400; second year, $250; third year, $125; fourth year, $80; total $855.

A fee of $1 a semester is charged for the use (optional) of a locker.

FELLOWSHIPS AND GRADUATE ASSISTANTSHIPS, SCHOLARSHIPS, PRIZES, FINANCIAL AID

Fellowships and Graduate Assistantships

The following fellowships and graduate assistantships are available. Applications should be submitted not later than April 1 preceding the period for which the award is to be made.

University Teaching Fellowships.—These are assigned for the academic year to the various departments of instruction. The applicant is expected to be a prospective candidate for a Doctoral degree, and to have a Master's degree or equivalent in the general field of his future doctoral study. Each Teaching Fellow receives an annual stipend (on a nine-month basis) of up to $1,350 plus full tuition for whatever schedule of study or research his fellowship duties permit him to carry. The University Teaching Fellow normally renders half-time service in classroom or laboratory assignments to the department of instruction directing his doctoral study. Application forms for these fellowships may be obtained from the executive officer of the department of instruction concerned.

Graduate Teaching Assistantships.—These are open in various departments of instruction to candidates for the Master's degrees. Each graduate teaching assistant renders a designated unit of service to his major department of instruction, and receives, depending upon his teaching or laboratory assignment, up to $1,215 on a nine-month basis plus tuition for the program of studies which the duties of his assistantship permit him to carry. Application should be made to the executive officer of the department of instruction concerned.

Special Fellowships.—The following Special Fellowships, supported by endowment, are available. Inquiry concerning them should be addressed to the executive officer of the department concerned.

Robin Miller Research Fellowship: A fellowship in medicine in the amount of $1,800, established in 1953 by bequest of Mrs. Robin Miller, is offered for the study of cardiovascular diseases.

Thomas Bradford Sanders Fellowships: Fellowships varying in amount from $900 to $1,500 plus tuition, established in 1928 by bequest of Miss Addie Sanders in memory of her brother, Thomas Bradford Sanders, are offered in various departments of science.

Scholarships and Prizes

Scholarships are awarded for two semesters unless otherwise specified and are credited in equal parts for each semester. Each holder must carry a full schedule of academic work during the period for which the scholarship is awarded. Applicants (except in the case of the Daughters of the American Revolution Scholarship and the Eugene and Agnes E. Meyer scholarships) must have established an academic record in courses at this institution, and should apply on prescribed forms which must be filed in the Office of the Chairman of the Committee on Scholarships not later than April 1 preceding the academic year for which the scholarship is to be awarded. Further information concerning the following scholarships may be obtained from the Chairman of the Committee on Scholarships, The George Washington University, Washington 6, D. C.

Anna Bartsch Scholarship.—This scholarship, in the amount of $500, established in 1946 by Dr. Anna Bartsch-Dunne, as a memorial to her mother, Anna Bartsch, is available to a woman in the School of Medicine, "of outstanding scholarship, character, and promise, who intends to make the practice of medicine her life profession". The award is made upon the recommendation of the Faculty of the School of Medicine. For the year 1956–57 this scholarship was awarded to Randi Veie Rosvoll.

Everett Lamont Bradley Scholarship.—This scholarship, in the amount of $200, established in 1954 by bequest of Alice R. H. Bradley in memory of her son, Everett Lamont Bradley, is available to a student in the School of Medicine. For the year 1956–57 this scholarship was awarded to George Liss.

Emma K. Carr Scholarships.—Six scholarships in the amount of $400 each and ten of $100 each, established in 1932 by Mrs. Emma K. Carr, are available to "young men (of the white race) for undergraduate or postgraduate work, considering character, capacity, and need".

Maria M. Carter Scholarship.—This scholarship in the amount of $100, established in 1871 by Mrs. Maria M. Carter, is available to a young man.

Isaac Davis Scholarship.—This scholarship, in the amount of $80, was established in 1869 by the Honorable Isaac Davis of Massachusetts. Nominations for the scholarship may be made "by the founder or his eldest lineal descendant". In case no such nomination is made, the scholarship is to be awarded by the University.

Hazleton Scholarship.—This scholarship, in the amount of $350, established in 1950 by the bequest of Lillie S. Hazleton, is awarded annually "for the use and assistance of needy and worthy students".

Eugene and Agnes E. Meyer Scholarships.—A scholarship fund in the amount of $3,500, established in 1952 by the Eugene and Agnes E. Meyer Foundation, is available annually "to assist promising students or applicants in meeting the costs of furthering their education, with preferential consideration to children of persons who are employed in public service, including service in the armed forces or the judiciary."

Julius S. Neviaser Prize in Orthopedic Surgery.—This prize of $100, established in 1956 by Dr. Julius S. Neviaser, is awarded annually to the student of the junior class of the School of Medicine who scores the highest grade in a written examination in Orthopedics.

John Ordronaux Prize.—This prize of $150 is awarded annually to the member of the graduating class of the School of Medicine who has completed the four-year medical course with the highest scholastic standing. In 1956–57 this prize was awarded to Orville Wright Donnelly.

The Zonta Club of Washington, D. C., Scholarship.—This scholarship, in the amount of $300, offered by the Zonta Club of Washington, D. C., is available to a woman who is a senior or graduate student with special interest in a professional or business career. In 1956–57 this scholarship was awarded to Brigitte Buchmann Nahmias.

Special Research Scholarships, supporting part-time work in the various departments, have been made available to selected medical students through grants by the Lederle Laboratories, the National Foundation for Infantile Paralysis, and the National Institutes of Health.

FINANCIAL AID

Loan Funds

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Inquiries should be directed to the Office of the Treasurer.

University Loan Fund.—The Trustees of The George Washington University have established a loan fund.

Harris Loan Fund.—This fund, established by George W. Harris, is available for loan to an orthoptic technician student.

Kellogg Medical School Loan Fund.—The W. K. Kellogg Foundation in Battle Creek, Michigan, has established a loan fund for students in the School of Medicine.

School of Medicine Loan Fund.—This fund, contributed by medical students, is available for loans to students in the School of Medicine.

Pfizer Medical School Loan Fund.—The Chas. Pfizer & Co., Inc., has established a fund for loans to students in the School of Medicine.

Henry Strong Educational Foundation.—The Henry Strong Educational Foundation, established at Chicago under the will of General Henry Strong, makes available a fund for loans to both men and women students under the age of twenty-five years.

Sutherland Medical School Loan Fund.—This fund, established by Mrs. Rose L. Sutherland, is available for loans to students in the School of Medicine.

Internship

In memory of her mother, Anna Bartsch, Dr. Anna Bartsch-Dunne established in 1946 a fund which provides $15 a month to aid in the support of an internship in the University Hospital. This internship, awarded annually, was awarded for the year 1957–58 to Palma Abraham.

REGULATIONS

Students in the School of Medicine are subject to, and are expected to familiarize themselves with, the general University regulations, stated in the University Catalogue.

Attendance

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required.

Grades

The following grading system is used *A* (90–100); *B* (80–89); *C* (75–79); *D* (65–74) condition; *E* (below 65) failure; *Inc.*, incomplete, the passing grade in each subject is *C*.

A student conditioned in any subject will not be advanced until such condition is removed and then only by authority of the Faculty.

Examinations

Examinations, which may be written, oral, or practical, will be held at the end of each semester.

All students in the School of Medicine are required to take Part I and Part II of the National Board Examinations, except that students from those states and foreign countries which do not recognize the National Board may be exempted from Part II by action of the Committee on Scholarship.

Graduation

Application for Graduation

Application for a degree should be filed in the Office of the Registrar at the time of registration for the senior year.

Presence at Graduation

A candidate is required to be present at the graduation exercises unless written application for graduation *in absentia* is approved by the Dean.

Right to Dismiss Students

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

THE DEGREE OF DOCTOR OF MEDICINE

Upon the satisfactory completion of the requirements of the School of Medicine, the degree of Doctor of Medicine is conferred.

Combined Arts and Medicine Curriculum

In order to be recommended for the degree of Bachelor of Arts, the candidate must complete at least ninety semester hours of prescribed college work (at least thirty hours and one year of residence must be completed in Columbian College, the senior liberal arts college), and the first year of the medical curriculum. Upon satisfactory completion of the fourth year of the medical curriculum the student becomes eligible for the degree of Doctor of Medicine.

REQUIREMENTS FOR THE DEGREE

Every candidate for graduation with the degree of Doctor of Medicine must be at least twenty-one years of age, of reputable character, and free of all indebtedness to the University. He must have satisfied the admission requirements, completed satisfactorily not less than four academic years of study as a matriculated student in Medicine, completed all required courses, and passed satisfactorily all prescribed examinations.

HONORS

A candidate who has completed the four-year medical course with an average grade of 90 may be recommended for graduation "with distinction."

INTERN AND RESIDENT TRAINING PROGRAM

The George Washington University Hospital offers rotating-type internships as classified by the National Intern Matching Program, Inc. Twenty-five internships of one year each are offered; fourteen in the Department of Medicine with emphasis on medicine, eleven in the Department of Surgery with emphasis on surgery, and two in the Department of Pathology with emphasis on pathology.

Rotating Internships, Emphasis on Medicine.—Interns will be assigned to seven months of general medicine, two months on the surgical service, and one month each on neuro-psychiatry, pediatrics, and obstetrics and gynecology.

Rotating Internships, Emphasis on Surgery.—Interns will be assigned to the surgical service for nine months, to general medicine for two months, and to obstetrics for one month.

Rotating Internships, Emphasis on Pathology.—Interns will be assigned to the pathology service for six months, to general medicine for two months, to surgery for two months, to pediatrics for one month, and to obstetrics for one month.

A total of approximately forty-two approved residencies are offered in anesthesiology, cardiac diseases, internal medicine, neurologic surgery, obstetrics-gynecology, oral surgery, pathology, physical medicine, psychiatry, roentgenology, surgery and thoracic surgery. Residency programs are of from one to four years depending upon the service. Appointments are for one year subject to renewal. In several of the fields there are affiliations with local and government hospitals.

Fellowships of one or two years are available to acceptable candidates in anesthesiology, cardiology, chest diseases, infectious diseases, outpatient service, physical medicine, rheumatic diseases, surgery and thoracic surgery.

For application blanks and further information, address the Superintendent, The George Washington University Hospital, Washington 7, D. C.

MEDICAL TECHNOLOGIST COURSE

The course for medical technologists consists of twelve consecutive months of didactic and practical work in all phases of clinical laboratory technique. The course meets the full requirements of the Registry of Medical Technologists of the American Society of Clinical Pathologists. Prerequisite: the Basic Course in Medical Technology offered by the Junior College of The George Washington University, or the equivalent.

Two classes are accepted each year, one entering in September and the other in March. Enrollment in each class is strictly limited so that personal instruction can be given.

Upon satisfactory completion of the course a certificate is awarded and the candidate is eligible for the certifying examination given by the Registry of Medical Technologists.

For application blanks and further information, address the Director of Laboratories, The George Washington University Hospital, Washington 7, D. C.

STUDENT LIFE

HEALTH ADMINISTRATION

The University maintains a health service that is primarily diagnostic in its intent. It also provides first aid in the event of an emergency.

Medical privileges include: (1) the physical examination of all entering students; (2) three visits by the University physician or surgeon, office or residence (District of Columbia) in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination; (3) hospitalization, including board and nursing in the University Hospital for not more than one week during any twelve-month period—the necessity to be determined by the Director of Health Administration. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

This medical benefit does not apply to illness or disability incurred previous to the University semester or prior to payment of tuition fees.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student who has severed his connection with the University is ineligible for medical benefits.

PHYSICAL EXAMINATIONS

All first-year students are given a comprehensive physical examination upon admission to the School of Medicine. The students are informed of the findings and advised regarding such measures as will tend to help them maintain a high standard of health.

In addition medical students benefit from the complete Tuberculosis Case Finding Program which the School has maintained since 1938–39. Under this program all students receive tuberculin tests, X-ray examinations, and such special attention from chest specialists as is necessary to reduce to a minimum the dangers from tuberculosis. Students are immunized against those diseases for which proven prophylactics exist.

LIVING ACCOMMODATIONS

The University maintains four residence halls. Meals are served at the Student Union.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance (for the fall semester by May first, for the spring semester by January first). Forms for application, together with detailed information, may be obtained from the Director of Activities for Women or the Director of Activities for Men.

Information concerning private rooming and boarding facilities near the University, for women students twenty-one years of age or older and for men students, may be obtained at the Housing Office, Lisner Auditorium. The reservation of rooms in private houses must be made by students.

Girls under the age of twenty-one who are enrolled for twelve or more semester hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitories only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitories except with persons approved by the Director of Activities for Women.

Women Students.—The Hattie M. Strong Residence Hall provides single rooms at $38 a month and double rooms at $33 a month a person. The Dolly Madison Residence Hall provides double rooms at $33 a month a person.

Men Students.—Welling Hall provides double rooms for $24 a month a person.

The John Quincy Adams Residence Hall provides 72 double rooms each with study alcove and bath. Rooms rent for $35 a month a person.

HONOR SOCIETIES

William Beaumont Medical Society.—Medical students showing unusual ability are elected by the active members of this society, which was founded to encourage and stimulate individual investigation.

Howard Kane-A. F. A. King Obstetrical Society.—The fifteen students in the third and fourth year classes who maintain the highest grades in their work in obstetrics are eligible for membership.

Smith-Reed-Russell Society.—Students of the third and fourth years who maintain a scholastic average of 88 per cent are eligible for membership.

Alpha Omega Alpha.—National Honor Medical Society. Members of the Junior and Senior classes meeting the qualifications specified by the constitution of the Society are eligible for election to membership.

RECREATION

The nation's capital provides abundant recreational resources, a large number of which are available at little or no cost. There are numerous art galleries, museums, concert halls, theaters, swimming pools, parks, and places of great historic interest. There are, in addition, the usual commercial recreation facilities found in a large city. Social activities are provided by student organizations of the University, the School of Medicine, and other student groups. Almost every religious faith is represented in Washington by one or more churches, and much spiritual, educational, social, and recreational activity is conducted by the various church groups. There are innumerable other cultural and educational facilities in Washington to meet almost any possible individual need or preference of a medical student and his family.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

COURSES OF INSTRUCTION

On the following pages of this Bulletin, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered by the School of Medicine. The School of Medicine serves other divisions of the University by making available to nonmedical students certain undergraduate and graduate courses in the following fields: Anatomy, Bacteriology, Biochemistry, Pathology, Pharmacology, Physical Medicine, and Physiology. The courses listed are subject to some slight change. The University reserves the right to withdraw any course announced.

Explanation of Course Numbers and Symbols

A number in parenthesis after the name of a course, indicates number of semester hours of credit which may be earned by nonmedical students.

First-year courses are numbered from 101 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and fourth-year courses, from 401 to 500.

Courses offered in the School of Medicine for nonmedical students.— Courses numbered from 101–200 are planned for upper-division students in undergraduate curricula. They may be credited toward higher degrees only when registration for graduate credit has been approved at the beginning of the course by the dean responsible for the graduate work and by the officer of instruction, and when the completion of additional work has been certified by the officer of instruction. Courses numbered from 201 to 300 are planned for graduate students.

ANATOMY

Ira Rockwood Telford, Ph.D., *Professor of Anatomy, Executive Officer*
Paul Calabrisi, Ph.D., *Professor of Anatomy*
Larus Einarson, M.D., *Visiting Research Professor of Anatomy*
Gerald Fred Hungerford, Ph.D., *Assistant Professor of Anatomy*
Frank Duane Allan, Ph.D., *Assistant Professor of Anatomy*
Thomas Nick Johnson, Ph.D., *Assistant Professor of Anatomy*
Dora Papara-Nicholson, M.D., *Assistant Research Professor of Anatomy*
Wilfred Walter Eastman, B.S., M.D., *Clinical Instructor in Anatomy*
Lloyd Eugene Church, D.D.S., M.S., *Clinical Instructor in Anatomy*
Raymond Nathan Brown, M.D., *Clinical Instructor in Anatomy*
Lysle Westley Williams, A.B., M.D., *Clinical Instructor in Anatomy*
Herbert Koro Kashiwa, M.S., *Fellow in Anatomy*
James Blake Thomas, A.B., *Fellow in Anatomy*

Special Lecturers

Webb Edward Haymaker, M.D., M.S., *Chief, Neuropathology Section, Armed Forces Institute of Pathology;* Neuroanatomy
Joseph Vitold Michalski, Ph.D., *Anatomist, Armed Forces Institute of Pathology;* Anatomy

101–2 *Gross Anatomy*

Calabrisi and Staff

Academic year: fall—12 hours a week; spring—8½ hours a week.

Regional dissection of the human body, supplemented with lectures and quiz sections. Study of X-ray anatomy to emphasize the functional aspects of the position, shape, and relation of the viscera and skeletal components.

103 *Human Embryology*

Allan and Staff

Fall—3 hours a week.

The origin and development of the human body. Special emphasis on the value of embryology in interpreting anatomical anomalies and variations as seen in gross dissection, surgery, obstetrics, and pathology.

104 *Neuroanatomy*

Johnson and Staff

Spring—5½ hours a week.

The macroscopic and microscopic study of the central nervous system and the special sense organs. Emphasis on such dynamic aspects as development, pathways, lesions, etc.

105 *Microscopic Anatomy* Telford, Hungerford, and Staff

Fall—9 hours a week.

Study of the detailed minute structure of cells, tissues, and organs of the human body, with emphasis on the relation of structure to function. Recognition and interpretation of histological sections tested by practical examinations.

106 *Living Anatomy* The Staff

Spring—1 hour a week.

An introduction to physical diagnosis, with special emphasis on topographical anatomy.

201–2 *Gross Anatomy* (8–6) Calabrisi and Staff

Academic year—as arranged.

For qualified nonmedical graduate students. Same as Anatomy 101–2. Anatomy 201—laboratory fee, $21; Anatomy 202—laboratory fee, $16.

203 *Human Embryology* (2) Allan and Staff

Fall—as arranged.

For qualified nonmedical graduate students. Same as Anatomy 103. Laboratory fee, $8.

204 *Neuroanatomy* (4) Johnson and Staff

Spring—as arranged.

For qualified nonmedical graduate students. Same as Anatomy 104. Laboratory fee, $13.

205 *Microscopic Anatomy* (4) Telford, Hungerford, and Staff

Fall—as arranged.

For qualified nonmedical graduate students. Same as Anatomy 105. Laboratory fee, $13.

221–22 *Seminar* (1–1) Allan and Staff

Academic year: 1 hour a week—as arranged.

Research or reports and discussions of special topics by the Staff and graduate students. For graduate students. Medical students are encouraged to attend.

295–96 *Research* (arr.) The Staff

Academic year—as arranged.

Fees to be arranged.

299–300 *Thesis* (3–3) The Staff

ANESTHESIOLOGY

Charles Seymour Coakley, M.D., *Professor of Anesthesiology, Executive Officer*
Donald Harrison Stubbs, A.M., M.D., *Clinical Professor of Anesthesiology*
Seymour Alpert, A.B., M.D., *Associate Professor of Anesthesiology*
Cunningham Ramsey MacCordy, M.D., *Assistant Professor of Anesthesiology*
Paula Reines Kaiser, M.B., Ch.B., M.D., *Associate in Anesthesiology*
Ruth Auguste Vankai, M.D., *Instructor in Anesthesiology*
Salomon Naphtali Albert, A.B., M.D., *Clinical Instructor in Anesthesiology*
William Eldridge Bageant, M.D., *Clinical Instructor in Anesthesiology*
Allen Widome, M.D., *Clinical Instructor in Anesthesiology*
Charles Gruenwald, A.B., M.D., *Clinical Instructor in Anesthesiology*
Dolores Suanes Tantoco, M.D., *Fellow in Anesthesiology*
Arturo Aguilar, M.D., *Assistant in Anesthesiology*
John Thomas Domann, B.S., M.D., *Assistant in Anesthesiology*
Herbert William Grambow, Jr., B.S., D.D.S., *Assistant in Anesthesiology*
Felisa Grospe, D.M.D., *Assistant in Anesthesiology*
Kamel James Hassan, B.S., M.D., *Assistant in Anesthesiology*
Rachel Henrietta Jucaban Jamandre, M.D., *Assistant in Anesthesiology*
Sang Ho Jin, M.D., *Assistant in Anesthesiology*
Yutaka Katoh, M.D., *Assistant in Anesthesiology*
Willem de Klerk Kruger, M.B., Ch.B., *Assistant in Anesthesiology*
Narisri Maharakhaka, M.D., *Assistant in Anesthesiology*
Jose Manuel Pariente, M.D., *Assistant in Anesthesiology*
Leman Serpen, B.S., M.D., *Assistant in Anesthesiology*
Elia Vernaglione, M.D., *Assistant in Anesthesiology*

320 *Anesthesiology* The Staff

Spring—1 hour a week.

Review of basic sciences, correlation between basic sciences and clinical work.

421–22 *Anesthesia Seminar* The Staff

Academic year—1 hour a week.

Students attend anesthesia seminars during their surgical clinical clerkships. University Hospital.

433–34 *Advanced Anesthesiology* The Staff

Academic year—as arranged.

Students are rotated through the work of the department for a period of two weeks and assigned to work in the operating rooms and to attend conferences and seminars. For the more advanced students a three-week elective is offered.

BACTERIOLOGY, HYGIENE, AND PREVENTIVE MEDICINE

Leland Wilbur Parr, Ph.D., *Professor of Bacteriology, Executive Officer*

Angus MacIvor Griffin, Ph.D., *Professor of Bacteriology*

Ralph Gregory Beachley, M.D., Dr.P.H., *Adjunct Professor of Public Health Practice*

Mary Louise Robbins, Ph.D., *Associate Professor of Bacteriology*

William Gray McCarten, M.S., *Assistant Professor of Bacteriology*

Rudolph Hugh, Ph.D., *Assistant Professor of Bacteriology*

William Donald Hann, M.S., *Associate in Bacteriology*

Charles Francis McCaffrey, M.D., *Clinical Instructor in Preventive Medicine and Public Health*

George Bernard Pelleu, Jr., B.S., *Teaching Fellow in Bacteriology*

Henry Douglas Spong, A.B., *Fellow in Bacteriology*

Special Lecturers

Chester Wilson Emmons, Ph.D., *Chief, Medical Mycology Unit, Laboratory of Infectious Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health;* Medical Mycology

Willard Hull Wright, D.V.M., Ph.D., *Chief, Laboratory of Tropical Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health;* Medical Zoology

John Roderick Heller, Jr., B.S., M.D., *Director, National Cancer Institute, National Institutes of Health;* Cancer Control

Robert Carter Cook, *Director, Population Reference Bureau; Editor, Journal of Heredity;* Medical Genetics

Robert Hanna Felix, M.D., M.P.H., *Director, National Institute of Mental Health, National Institutes of Health;* Mental Hygiene

Francis Byron Gordon, Ph.D., M.D., *Head, Virology Division, National Naval Medical Research Institute, Naval Medical Center;* Virology

Edward Kramer Funkhouser, B.S., *Executive Secretary, District of Columbia Tuberculosis Association;* Community Health Resources

Samuel Jacob Ajl, Ph.D., *Assistant Chief, Department of Bacteriology, Communicable Diseases Division, Walter Reed Army Institute of Research, Walter Reed Army Medical Center;* Microbiological Chemistry

Sarah Bishop Brooks, R.N., B.S. in P.H.N., *Director, Division of Public Health Nursing, Arlington County Health Department;* Public Health Practice

Martin Marc Cummings, B.S., M.D., *Chief, Research and Education Service, Department of Medicine and Surgery, Veterans Administration;* Medical Bacteriology

Morris Cecil Leikind, M.S., *Chief, Historical Research Division, Medical Museum, Armed Forces Institute of Pathology;* History of Microbiology

James Lee Goddard, M.D., M.P.H., *Chief, Accident Prevention Program, Bureau of State Services, Public Health Service;* Accident Prevention

101 *Biostatistics* (1) Griffin

Fall—Sat., 11:00 A.M.

The meaning and use of statistical terms and methods pertinent to the design of experiments and the interpretation of the results obtained in laboratory, clinical, and field trials.

112 *General Bacteriology* (4) Hugh

Spring—Mon., Wed., and Fri., 9:10 to 12:00 A.M.

For nonmedical students. A study of the fundamentals of bacteriology, including hygienic applications. Methods of cultivation and control of several groups of microorganisms are studied in the laboratory. Prerequisite: any biological laboratory science; Chemistry 11–12. Laboratory fee, $13.

209 *Medical Microbiology* (1–11) Parr, Griffin

Fall: lecture (4 hours), laboratory (10 hours)—as arranged.

Bacteria, rickettsia, viruses, yeasts, molds, protozoa, and metazoa which relate to the health and diseases of man—cultural study of most important forms; methods of diagnosis by microscopic, cultural, immunologic, and animal reactions; theory and methods of immunology; vaccines; serums; antibiotics. Open to suitably prepared graduate students; may be elected as a whole or in part by adding the appropriate letter to the course number, with credit allocated as follows: (a) *Bacteriology*, including rickettsia and viruses—lecture (4), laboratory (3); (b) *Parasitology*, including medical mycology—lecture (2), laboratory (1); (c) *Immunology* (1). May be taken by a limited number of candidates for Master's degrees. Laboratory fee, $4.50 for each semester hour of laboratory work.

210 *Fundamentals of Epidemiology and Public Health* (2) Parr and Staff

Spring—Mon., 2:00 to 4:00 P.M.

Sources, modes, and implications of infection and injury. Consideration also given the problems of accidents and industrial medicine. Open to liberal arts graduate students. Prerequisite: Bacteriology 112 or 209.

219–20 *Advanced Microbiology* (arr.) Hugh and Staff

Academic year—as arranged.

Special study of advanced methods and current problems in microbiology for suitably qualified students specializing in microbiology. Prerequisite: Bacteriology 112 or 209; Chemistry 151–52 or the equivalent; permission of the instructor. Laboratory fee, $4.50 a semester hour.

230 *Statistics in Microbiology* (3) Griffin

Spring—as arranged.

The application of statistical methods to the problems of microbiology. For graduate students. Prerequisite: entrance or elementary college algebra.

232 *Immunological Methods* (3) McCarten

1958–59 and alternate years: spring—as arranged.

Preparation and testing of serological materials. Demonstration of basic serological phenomena. For graduate students. Prerequisite: Bacteriology 112 or 209 and permission of the instructor. Laboratory fee, $11.

234 *Virology* (6) Robbins

Spring—as arranged.

Study of viruses and rickettsiae. Lectures and laboratory exercises. For graduate students. Prerequisite: Bacteriology 112 or 209 and permission of the instructor. Laboratory fee, $16.

240 *Advanced Epidemiology and Public Health* (3) Parr

Spring—as arranged.

Conferences, readings, and problems for graduate students dealing with specialized and advanced phases of the topics presented in Bacteriology 210. Prerequisite: Bacteriology 210.

293–94 *Staff Seminar* (1–1) The Staff

Academic year—as arranged.

For graduate students. Bi-weekly throughout the year.

295–96 *Research in Bacteriology* (arr.) The Staff

Academic year—as arranged.

299–300 *Thesis* (3–3) The Staff

401 *Public Health Practice* Beachley and Staff

Fall—1 hour a week for 5 weeks.

Study of public health practice at national, state, city, and county levels. Public and private agencies.

BIOCHEMISTRY

Joseph Hyram Roe, Ph.D., *Professor of Biochemistry, Executive Officer*
Carleton Raymond Treadwell, Ph.D., *Professor of Biochemistry*
*Bernard Leonard Horecker, Ph.D., *Professorial Lecturer on Enzymes*
William Robert Carroll, Ph.D., *Professorial Lecturer on Proteins*
Charles Huntt Fugitt, Ph.D., *Professorial Lecturer on Physical Biochemistry*
George Gilbert Ashwell, M.S., M.D., *Professorial Lecturer on Enzymes*
Benjamin Williams Smith, Ph.D., *Associate Professor of Biochemistry*
George Vartkes Vahouny, M.S., *Instructor in Biochemistry*
Archie Lee Smith, M.S., *Instructor in Biochemistry*
Harold William Clark, Jr., Ph.D., *Associate in Biochemistry*
Donald McKay, A.B., *Fellow in Biochemistry*
Stanley Irwin Sherr, B.S., *Sanders Fellow in Biochemistry*
Paul Leon Zubkoff, A.B., *Sanders Fellow in Biochemistry*

113–14 *Biochemistry* Roe and Staff

Academic year: lecture (2 hours), conference (1 hour), laboratory (6 hours)—as arranged.

Physiological and clinical chemistry. For medical students.

221–22 *Biochemistry* (4–4) Treadwell

Academic year—Tues. and Thurs., 9:00 to 12:00 A.M. and 1:00 to 2:00 P.M.

A lecture and laboratory course for nonmedical students. Prerequisite: Chemistry 22 and 152. Material fee, $15 a semester.

224 *Biochemistry of the Enzymes* (1) Ashwell

Spring—Mon., 5:00 P.M.

Lecture course dealing with the biochemistry of the enzymes and enzyme reactions. Prerequisite: Biochemistry 113 or 221.

225–26 *Biochemical Procedures* (3–3) B. Smith and Staff

Academic year—as arranged.

A laboratory course. Material fee, $16 a semester.

227–28 *Biochemistry Seminar* (1–1) Roe

Academic year—Fri., 4:00 P.M.

The current literature in the field of biochemistry, mainly for graduate students, but open to a limited number of specially qualified medical students.

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* On leave of absence 1957–58.

232 *Proteins and Amino Acids* (1) Carroll

Spring—Wed., 5:00 P.M.

A lecture course. Prerequisite: Biochemistry 113 or 221.

234 *Physical Biochemistry* (1) Fugitt

Spring—Sat., 9:00 A.M.

A lecture course. Physical methods as applied to biochemical problems, including macromolecules and radiobiology. Prerequisite: Biochemistry 113 or 221.

251 *Carbohydrate Metabolism* (1) Roe

1958–59 and alternate years: Fall—Sat., 9:00 A.M.

A lecture course. Prerequisite: Biochemistry 114 or 222.

261 *Biochemistry of the Lipids* (1) Treadwell

1957–58 and alternate years.

A lecture course. Prerequisite: Biochemistry 114 or 222.

295–96 *Research in Biochemistry* (arr.) Roe, Treadwell

Academic year—as arranged.

299–300 *Thesis* (3–3) Roe, Treadwell

DERMATOLOGY AND SYPHILOLOGY

Harry Ford Anderson, M.D., *Professor of Dermatology and Syphilology, Executive Officer*

George William Creswell, A.B., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

Hayden Kirby-Smith, B.S., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

James Quincy Gant, Jr., M.S., M.D., *Assistant Clinical Professor of Dermatology and Syphilology*

Wendell Melvin Willett, A.B., M.D., *Associate in Dermatology and Syphilology*

Reuben Goodman, M.D., *Associate in Dermatology and Syphilology*

Crawford Southwell Brown, A.B., M.D., *Clinical Instructor in Dermatology and Syphilology*

213 *Dermatology and Syphilology* The Staff

Fall—1 hour a week.

Lectures on diseases of the skin and syphilis.

317–18 *Clinic* The Staff

Two weeks in rotation as arranged during academic year.

Case demonstrations, diagnosis, and treatment of skin diseases and syphilis. D. C. General Hospital.

407–8 *Clinic* The Staff

Two hours a week as arranged in rotation during academic year.

Dermatology and syphilology in infants and children. Children's Hospital.

409–10 *Clinic* The Staff

Two hours a week as arranged in rotation during academic year .

Clinical demonstrations, diseases of the skin. University Hospital.

MEDICINE

Thomas McPherson Brown, A.B., M.D., *Eugene Meyer Professor of Medicine, Executive Officer*

Monroe James Romansky, A.B., M.D., *Professor of Medicine*

Charles Robert Lee Halley, A.B., M.D., *Clinical Professor of Medicine*

Clayton Bernard Ethridge, M.D., *Clinical Professor of Medicine*

Louis Katz Alpert, B.S., M.D., *Clinical Professor of Medicine*

Sol Katz, B.S., M.D., *Professorial Lecturer in Medicine*

Joseph Francis Fazekas, B.S., M.D., *Professorial Lecturer in Medicine*

Robert William Berliner, B.S., M.D., *Professorial Lecturer in Medicine*

Henry Field, Jr., B.S., M.D., *Professorial Lecturer in Medicine*

John Coleman Nunemaker, M.S., M.D., *Professorial Lecturer in Medicine*

Thomas Hodge McGavack, A.B., M.D., *Professorial Lecturer in Medicine*

John McCallum Evans, A.B., M.D., *Associate Professor of Medicine*

Alvin Edward Parrish, M.D., *Associate Professor of Medicine*

Peter Diacoumis Comanduras, B.S., M.D., M.S. in Med., *Associate Clinical Professor of Medicine*

Clarence Richard Hartman, A.B., M.D., *Associate Clinical Professor of Medicine*

Walter Kendall Myers, B.S., M.D., *Assistant Clinical Professor of Medicine*

John Alton Reed, A.B., M.D., *Assistant Clinical Professor of Medicine*

Theodore Judson Abernethy, B.S., M.D., *Assistant Clinical Professor of Medicine*

William Travis Gibb, A.B., M.D., *Assistant Clinical Professor of Medicine*

Roy Hertz, Ph.D., M.D., *Assistant Clinical Professor of Medicine*

Samuel Ross Taggart, M.D., *Assistant Clinical Professor of Medicine*

Benjamin Manchester, M.D., *Assistant Clinical Professor of Medicine*

Pearl Holly, M.S., M.D., *Assistant Clinical Professor of Medicine*

James Joseph Feffer, A.B., M.D., *Assistant Clinical Professor of Medicine*

Ludwig George Lederer, M.D., Ph.D., *Assistant Clinical Professor of Medicine*

John Eldrid Smith, A.B., M.D., *Assistant Clinical Professor of Medicine*

John Watkins Trenis, A.B., M.D., *Assistant Clinical Professor of Medicine*

Albert David Kistin, A.M., M.D., *Assistant Clinical Professor of Medicine*

Andrew Gabriel Prandoni, B.S., M.D., *Assistant Clinical Professor of Medicine*
Ruth Hechler Wichelhausen, M.D., *Assistant Clinical Professor of Medicine*
Lawrence Elias Putnam, A.B., M.D., *Assistant Clinical Professor of Medicine*
Roy Ernest Albert, A.B., M.D., *Assistant Clinical Professor of Medicine*
Halla Brown, M.D., *Assistant Clinical Professor of Medicine*
Elizabeth Harman Hill, M.D., *Assistant Clinical Professor of Medicine*
Maurice Protas, A.B., M.D., *Associate in Medicine*
John Minor, A.B., M.D., *Associate in Medicine*
Lawrence Jay Thomas, B.S., M.D., *Associate in Medicine*
Charles William Ordman, A.B., M.D., *Associate in Medicine*
Benjamin Calloway Jones, Jr., A.B., M.D., *Associate in Medicine*
Richard Bernard Castell, A.B., M.D., *Associate in Medicine*
Myer Harold Stolar, B.S., M.D., *Associate in Medicine*
Sam Thompson Gibson, B.S., M.D., *Associate in Medicine*
Walter Lewis Nalls, M.D., *Associate in Medicine*
Alfred Brigulio, M.D., *Associate in Medicine*
Ralph Bretney Miller, A.B., M.D., *Associate in Medicine*
Thomas Stone Sappington, A.B., M.D., *Associate in Medicine*
Ernest Cotlove, B.S., M.D., *Associate in Medicine*
Thomas James Kennedy, Jr., B.S., M.D., *Associate in Medicine*
Jack Orloff, M.D., *Associate in Medicine*
John Christian Ransmeier, A.B., M.D., *Associate in Medicine*
Samuel Jacob Nathan Sugar, Phar.G., M.D., *Associate in Medicine*
Joseph Ney, B.S., M.D., *Associate in Medicine*
Joseph Beinstein, A.B., M.D., *Associate in Medicine*
Frank Solomon Bacon, B.S., M.D., *Associate in Medicine*
Henry Dunlop Ecker, B.S., M.D., *Associate in Medicine*
Jack Jacob Rheingold, A.B., M.D., *Associate in Medicine*
Irene Gorski Tamagna, M.D., *Associate in Medicine*
John Bayne Marbury, M.D., *Associate in Medicine*
Louis Ross, M.D., *Associate in Medicine*
Frederic Dunbar Chapman, A.B., M.D., C.M., *Associate in Medicine*
John Wilmer Latimer, Jr., M.D., *Associate in Medicine*
Luther Henry Snyder, A.B., M.D., *Associate in Medicine*
Charles Wilson Jones, A.B., M.D., *Associate in Medicine*
Thomas Joseph Pekin, B.S., M.D., *Associate in Medicine*
Robert George Taylor, M.D., *Associate in Medicine*
Charles Waters Thompson, M.D., *Associate in Medicine*
James Walling Long, M.D., *Associate in Medicine*
Eugene Solomen Gladsden, B.S., M.D., *Associate in Medicine*

Maurice Mensh, M.D., *Associate in Medicine*
Arthur Rosenbaum, B.S., M.D., *Associate in Medicine*
Jarvis Edwin Seegmiller, A.B., M.D., *Associate in Medicine*
Irvin Kerlan, B.S., M.D., C.P.H., *Associate in Medicine*
Virginia Patterson Beelar, A.B., M.D., *Associate in Medicine*
Lester Sylvan Blumenthal, A.B., M.D., M.S. in Med., *Associate in Medicine*
Stanley William Kirstein, B.S., M.D., *Associate in Medicine*
James Francis Ambury, B.S., M.D., *Associate in Medicine*
Robert Norwood Coale, B.S., M.D., *Associate in Medicine*
Israel Kessler, M.S., M.D., *Associate in Medicine*
Francis James Murray, B.S., M.D., *Associate in Medicine*
Edwin Pearson Parker III, B.S., M.D., *Associate in Medicine*
Morris Hirsh Rosenberg, A.B., M.D., *Associate in Medicine*
John William DuChez, M.D., *Associate in Medicine*
Warren Daniel Brill, B.S., M.D., *Associate in Medicine*
Marvin Fuchs, B.S., M.D., *Associate in Medicine*
William Jack Weaver, Jr., A.B., M.D., *Associate in Medicine*
Ruth Boschwitz Benedict, A.B., M.D., *Associate in Medicine*
Harold Martin Silver, A.B., M.D., *Associate in Medicine*
Stewart William Bush, B.S., M.D., *Associate in Medicine*
James Theodore Burns, M.D., *Associate in Medicine*
William Otis Bailey, Jr., M.D., *Associate in Medicine*
Thomas Lees Hartman, A.M., M.D., *Associate in Medicine*
Boris Rabkin, A.B., M.D., *Associate in Medicine*
Morton Harold Rose, M.D., *Associate in Medicine*
Cyril Augustus Schulman, B.S., M.D., *Associate in Medicine*
Louis Aleck Craig, Jr., A.B., M.D., *Associate in Medicine*
Abraham Wolffe Danish, A.B., M.D., *Associate in Medicine*
Milton Gusack, A.B., M.D., *Associate in Medicine*
Adolph Friedman, A.B., M.D., *Associate in Medicine*
Alvin Randolph Sweeney, Jr., A.B., M.D., *Associate in Medicine*
James Irving Boyd, M.D., M.S., *Lecturer in Medicine*
William Robert Felts, Jr., B.S., M.D., *Instructor in Medicine*
George Archibald Kelser, Jr., B.S., M.D., *Instructor in Medicine*
Charles Edward Law, M.D., *Clinical Instructor in Medicine*
Emil Herbert Bauersfeld, A.B., M.D., *Clinical Instructor in Medicine*
Harry Clark Bates, B.S., M.D., *Clinical Instructor in Medicine*
Jeanne Cecile Bateman, A.B., M.D., *Clinical Instructor in Medicine*
George Sharpe, A.B., M.D., *Clinical Instructor in Medicine*
William Lewis, M.D., *Clinical Instructor in Medicine*
Alvin Seltzer, B.S., M.D., *Clinical Instructor in Medicine*
Samuel Dennis Loube, A.B., M.D., *Clinical Instructor in Medicine*
Alfred Baer, A.B., M.D., *Clinical Instructor in Medicine*

Jack Kleh, A.B., M.D., *Clinical Instructor in Medicine*
Edward Luke Rea, A.B., M.D., *Clinical Instructor in Medicine*
James Packard Mann, M.D., *Clinical Instructor in Medicine*
Maurice Arthur Sislen, A.B., M.D., *Clinical Instructor in Medicine*
William Holmes Crosby, Jr., A.B., M.D., *Clinical Instructor in Medicine*
Joseph Hicks Watson, B.S., M.D., *Clinical Instructor in Medicine*
Conrad Gossels, M.D., *Clinical Instructor in Medicine*
Charles Joseph Savarese, Jr., A.B., M.D., *Clinical Instructor in Medicine*
James Eliot Chapman, M.D., *Clinical Instructor in Medicine*
Bernard Robert Cooperman, A.B., M.D., *Clinical Instructor in Medicine*
Marshall Hannis Jacobson, A.B., M.D., *Clinical Instructor in Medicine*
Gottfried Karl Duschak, M.D., *Clinical Instructor in Medicine*
Norman Hartley Rubenstein, M.D., *Clinical Instructor in Medicine*
Howard Otis Mott, A.B., M.D., *Clinical Instructor in Medicine*
Max Gimble Sherer, M.S., M.D., *Clinical Instructor in Medicine*
Jesse Leonard Steinfeld, B.S., M.D., *Clinical Instructor in Medicine*
Donald Morgan Watkin, A.B., M.D., *Clinical Instructor in Medicine*
Edward Adelson, B.S., M.D., *Clinical Instructor in Medicine*
Gerald John Fisher, A.B., M.D., *Clinical Instructor in Medicine*
William Leete Stone, A.B., M.D., *Clinical Instructor in Medicine*
Ted Clemens, Jr., B.S., M.D., *Clinical Instructor in Medicine*
Jacob Robbins, A.B., M.D., *Clinical Instructor in Medicine*
Bernard Howard Ostrow, A.B., M.D., *Clinical Instructor in Medicine*
James Charles Mandes, A.B., M.D., *Clinical Instructor in Medicine*
Irene I-Lien Hsu Siu, B.S., M.D., *Clinical Instructor in Medicine*
Charles David Cooper, A.B., M.D., *Clinical Instructor in Medicine*
Bertle Nelson, A.B., M.D., *Clinical Instructor in Medicine*
Robert Reid Belton, A.B., M.D., *Clinical Instructor in Medicine*
Dorothea Beckh Chapman, M.D., *Clinical Instructor in Medicine*
Robert Lynwood Howard, A.B., M.D., *Clinical Instructor in Medicine*
Walter Kurland, B.S., M.D., *Clinical Instructor in Medicine*
Edward Joseph Leonard, M.D., *Clinical Instructor in Medicine*
Paul Wesley Yost, B.S., M.D., *Clinical Instructor in Medicine*
William Kirkman Billingsley, Jr., A.B., M.D., *Clinical Instructor in Medicine*
Robert Sirkosky Gordon, Jr., A.B., M.D., *Clinical Instructor in Medicine*
Donald Sharp Frederickson, B.S., M.D., *Clinical Instructor in Medicine*
Sam Chapman Pascoe, A.B., M.D., *Clinical Instructor in Medicine*
Wilfred Russell Ehrmantraut, B.S., M.D., *Clinical Instructor in Medicine*
Jack Crowell, M.D., *Clinical Instructor in Medicine*
David Stanley Davis, A.B., M.D., *Clinical Instructor in Medicine*
Gustave Lennard Gold, B.S., M.D., *Clinical Instructor in Medicine*

Herschel Elroy Richardson, A.B., M.D., *Clinical Instructor in Medicine*
John Whitson Roark, B.S., M.D., *Clinical Instructor in Medicine*
Jerome Harold Epstein, A.B., M.D., *Clinical Instructor in Medicine*
Margaret Katherina McCabe, M.D., *Fellow in Medicine (Neoplastic Diseases)*
Normelio Nedel, M.D., *Fellow in Medicine (Cardiovascular Diseases)*
Cesar Augusto Caceres, B.S., M.D., *Robin Miller Fellow in Medicine (Cardiovascular Diseases)*
Juan Bautista Calatayud, M.D., *Fellow in Medicine (Cardiovascular Diseases)*
Edgar Elliot Peltz, A.B., M.D., *Fellow in Medicine (Cardiovascular Diseases)*
Robert Smallwood Poole, A.B., M.D., *Fellow in Medicine (Cardiovascular Diseases)*
Henry Krause Beye, A.M., M.P.H., M.D., *Assistant in Medicine*
John David Crummett, A.B., M.D., *Assistant in Medicine*
Elton Herman, M.D., *Assistant in Medicine*
Sarah Pamelia Leech, A.B., M.D., *Assistant in Medicine*
John Peter Nasou, A.B., M.D., *Assistant in Medicine*
Harold Heacock Orvis, Jr., B.S., M.D., *Assistant in Medicine*
Victor Schocken, A.B., M.D., *Assistant in Medicine*
Edward Charles Senay, A.B., M.D., *Assistant in Medicine*
Josephine von Hippel, B.S., M.D., *Assistant in Medicine*

106 *Living Anatomy* The Staff

Spring—1 hour a week.

An introduction to physical diagnosis, with special emphasis on topographical anatomy.

236 *Clinical Microscopy* The Staff

Spring—3 hours a week.

Conferences and studies in the clinical application of laboratory examinations of blood, body fluids, exudates, excreta.

242 *Physical Diagnosis* The Staff

Spring—6 hours a week.

Covers not only theoretical but practical application of principles of physical diagnosis as related to examination of patients.

243–44 *Introduction to Medicine* The Staff

Academic year—2 hours a week.

Lectures covering the principles of internal medicine preparatory to clinical studies and training in the inpatient and outpatient services.

325–26 *Clinical Clerkship* The Staff

Eight weeks as arranged during academic year.

Training with bed patients under individual instruction designed to develop ability in examination of patients and case taking as well as practice in clinical microscopy. D. C. General Hospital.

327–28 *Clinical Pathological Conferences I* The Staff

Academic year—1 hour a week.

Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the Staff. Clinical, laboratory, and necropsy findings are compared.

339–40 *Therapeutic Conferences I* Staff of Medicine and Pharmacology

Academic year—1 hour a week.

Conferences designed to emphasize the application of pharmacological principles to the problems of clinical medicine. University Hospital.

349–50 *Medical Conferences* The Staff

Academic year—2 hours a week.

D. C. General Hospital.

421–22 *Outpatient Clinics* The Staff

Six weeks as arranged during academic year.

Individual case studies under personal supervision of the Staff. Daily clinics on current medical problems and seminars stressing physiological aspects of diseases. Individual examinations and instruction in medical specialties. University Hospital.

423–24 *Clinical Clerkship* The Staff

Six weeks as arranged during academic year.

University, Mt. Alto, and D. C. General hospitals.

427–28 *Clinical Pathological Conferences II* The Staff

Academic year—1 hour a week.

Continuation of Medicine 327–28.

429–30 *Clinical Pathological Conferences III* The Staff

Academic year—1 hour a week.

Conferences are held at the University Hospital. Attendance is required of students during their medical clerkships there.

NEUROLOGY AND NEUROLOGICAL SURGERY

James Winston Watts, B.S., M.D., *Professor of Neurological Surgery, Executive Officer*
Harold Stevens, Ph.D., M.D., *Professor of Neurology*
Seymour Solomon Kety, A.B., M.D., *Professorial Lecturer in Neurology*
Hyman David Shapiro, M.D., *Associate Clinical Professor of Neurology*
Robert Henry Groh, B.S., M.D., *Associate Clinical Professor of Neurology*
Jonathan Marshall Williams, M.D., *Assistant Clinical Professor of Neurological Surgery*
James Peter Murphy, B.S., M.D., *Assistant Clinical Professor of Neurological Surgery*
Hugo Victor Rizzoli, A.B., M.D., *Assistant Clinical Professor of Neurological Surgery*
Anatole Stephen Dekaban, M.D., Ph.D., *Assistant Clinical Professor of Neurology*
Paul Chodoff, A.B., M.D., *Assistant Clinical Professor of Neurology*
George Davis Weickhardt, M.D., *Associate in Neurology*
Harvey Ammerman, B.S., M.D., *Associate in Neurological Surgery*
George Joseph Hayes, B.S., M.D., *Associate in Neurological Surgery*
Garrett Michael Swain, M.D., *Clinical Instructor in Neurological Surgery*
Marvin Curtis Korengold, D.D.S., B.S., M.D., *Clinical Instructor in Neurology*
John Thomas Lord, A.B., M.D., C.M., *Clinical Instructor in Neurological Surgery*
Delora Fowler Mott, M.D., *Clinical Instructor in Neurology*
Cosimo Ajmone Marsan, M.D., *Clinical Instructor in Neurology*
Norman Harold Horwitz, A.B., M.D., *Clinical Instructor in Neurological Surgery*
Zack Witten Sanders, A.B., M.D., *Clinical Instructor in Neurology*
Ruth Kerr Jakoby, A.B., M.D., *Fellow in Neuropathology*
Jesus Lopezlira, M.D., *Fellow in Neurology and Neurological Surgery*
Wolfgang Theodor Koos, M.D., *Assistant in Neurological Surgery*

249 *Neurology: Basic* Stevens, Williams

Fall—1 hour a week.

Methods used to study the form and function of the nervous system. Lectures and laboratory demonstrations.

250 *Neurology* Stevens, Shapiro

Spring—1 hour a week.

Introductory lectures on clinical neurology with specimens, lantern slides, and motion pictures.

331 *Neurology and Neurological Surgery* Watts, Stevens

Fall—1 hour a week.

Clinical lectures and demonstrations.

333–34 *Neurology and Neurological Surgery, Clinical Clerkship* Stevens, Williams, Ammerman

In conjunction with Neurology 335–36. Two weeks in rotation as arranged during academic year.

Instruction in history, physical examination, ordinary clinical procedures. Attendance at neurosurgical operations. Six students in rotation. D. C. General Hospital.

335–36 *Neurological Conferences* Stevens and Staff

In conjunction with Neurology 333–34. Two weeks in rotation as arranged during academic year.

Clinical conference one afternoon a week followed by clinicopathologic study of specimens from current necropsies. Six students in rotation. D. C. General Hospital.

431–32 *Neurology and Neurological Surgery Clinic* Shapiro, Rizzoli

Two hours a week for three weeks in rotation as arranged during academic year.

Neurological outpatient clinic. Consultation of staff on ambulatory cases, demonstration of diagnostic procedures, disposition of neuropsychiatric cases, ward rounds. Six students in rotation. University Hospital.

433–34 *Clinical Neurology* Groh

Two hours a week for three weeks in rotation as arranged during academic year.

Neurological inpatient examinations and demonstrations. Six students in rotation. St. Elizabeths Hospital.

436 *Neurological Surgery (elective)* Murphy and Staff

Spring—1 hour a week.

Lectures and motion picture demonstration of neurosurgical problems.

OBSTETRICS AND GYNECOLOGY

John Parks, M.S., M.D., *Professor of Obstetrics and Gynecology*

Henry Lauran Darner, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*

George Nordlinger, A.B., M.D., *Clinical Professor of Obstetrics and Gynecology*

Robert Henry Barter, B.S., M.D., *Associate Professor of Obstetrics and Gynecology, Executive Officer*

Samuel Mayer Dodek, A.M., M.D., *Associate Clinical Professor of Obstetrics and Gynecology*

James Glover Sites, M.D., *Assistant Professor of Obstetrics and Gynecology*

Jeremiah Keith Cromer, M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*

James Albert Dusbabek, M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*

Clarence Kendall Fraser, Ph.B., M.D., *Assistant Clinical Professor of Obstetrics and Gynecology*

Barton Winters Richwine, M.D., *Associate in Obstetrics and Gynecology*

Floyd Sterling Rogers, M.D., *Associate in Obstetrics and Gynecology*

Rufus Martin Roll, A.B., M.D., *Associate in Obstetrics and Gynecology*

Caroline Jackson, A.M., M.D., *Associate in Obstetrics and Gynecology*

William Thurston Lady, M.D., *Associate in Obstetrics and Gynecology*

Jed Williams Pearson, Jr., A.B., M.D., *Associate in Obstetrics and Gynecology*

Thomas Miles Leonard, Ph.B., M.D., *Associate in Obstetrics and Gynecology*

Julius Robert Epstein, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Morton Selwyn Kaufman, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Samuel Hazen Shea, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Albert Seymour Bright, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Shirley Sue Martin, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Neel Jack Price, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Roland Essig Bieren, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Alexander LeSueur Russell, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Thomas Ashton Wilson, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Marvin Peace Footer, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Donald Walters, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Joseph Marshall Friedman, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Leon McNeely Liverett, B.S., M.D., *Clinical Instructor in Obstetrics and Gynecology*

William Prentiss McKelway, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

William Hurlbert Cooper, A.B., M.D., *Clinical Instructor in Obstetrics and Gynecology*

Peter Soyster, M.D., *Clinical Instructor in Obstetrics and Gynecology*

Ross James Clark, B.S., M.D., *Assistant in Obstetrics and Gynecology*

Lee Washington Davis, A.B., M.D., *Assistant in Obstetrics and Gynecology*

John Wharton Harris, A.B., M.D., *Assistant in Obstetrics and Gynecology*

Taylor Herman Kirby, Jr., A.B., M.D., *Assistant in Obstetrics and Gynecology*

Howard Gurr McQuarrie, M.D., *Assistant in Obstetrics and Gynecology*

Roger West Parkinson, B.S., M.D., *Assistant in Obstetrics and Gynecology*

John Frederick Pauly, M.D., *Assistant in Obstetrics and Gynecology*

Irwin Winn Rovner, A.B., M.D., *Assistant in Obstetrics and Gynecology*

Nelson Monroe Tart, B.S., M.D., *Assistant in Obstetrics and Gynecology*

William Davies Wallace, Jr., B.S., M.D., *Assistant in Obstetrics and Gynecology*

254 *Introduction to Obstetrics and Gynecology* Dodek, Fraser

Spring—1 hour a week.

Lectures and demonstrations on the development and physiology of the female reproductive system and the management of normal pregnancy.

301–2 *Manikin Demonstrations* Footer

One hour a week for eight weeks in rotation as arranged during academic year.

The mechanism of labor and various types of operative delivery demonstrated to sections of the junior class. D. C. General Hospital.

337–38 *Obstetrics and Gynecology* The Staff

Academic year—2 hours a week.

Lectures and demonstrations on the principles of obstetrics and gynecology.

351–52 *Clinical Clerkship* The Staff

Four weeks during academic year as arranged.

Clerkship with patients, including ward rounds, operating room demonstrations, and weekly clinic. D. C. General Hospital.

439–40 *Clinic in Obstetrics and Gynecology* Parks, Barter, Sites

One hour a week for eight weeks in rotation as arranged during academic year.

Student presentation and discussion of patient problems. Demonstration of equipment used in obstetric and gynecologic practice.

441–42 *Clinical Obstetrics* The Staff

Academic year—as arranged.

Students participate in prenatal and postnatal clinic care, observe the course of labor and deliver patients under supervision, observe and participate in the gynecological clinics and operating rooms of the University and D. C. General hospitals, attend bi-weekly departmental conferences and daily ward rounds in the University and D. C. General hospitals.

443–44 *Clinical Gynecology* The Staff

Eight weeks in rotation as arranged during academic year.

Students observe and participate in the gynecological clinics and operating rooms of the University and D. C. General hospitals.

OPHTHALMOLOGY

Ronald Atmore Cox, A.B., M.D., *Professor of Ophthalmology, Executive Officer*
Ernest Alfred Watson Sheppard, M.D., C.M., *Clinical Professor of Ophthalmology*
Richard Wallace Wilkinson, A.B., M.D., M.S. in Med., *Assistant Clinical Professor of Ophthalmology*
Carmon Robert Naples, B.S., M.D., *Associate in Ophthalmology*
Walter Joseph Romejko, M.D., *Associate in Ophthalmology*
William Paxson Chalfant, Jr., M.D., *Associate in Ophthalmology*
William Joseph Graham Davis, A.B., M.D., *Associate in Ophthalmology*
Robert Edward duPrey, B.S., M.D., *Associate in Ophthalmology*
Robert Day, A.B., M.D., *Associate in Ophthalmology*
Melvin Gustavus Alper, A.B., M.D., *Clinical Instructor in Ophthalmology*
Oscar Lavine, M.D., *Clinical Instructor in Ophthalmology*
John Henry Gilligan, M.D., *Clinical Instructor in Ophthalmology*

352 *Ophthalmology* — The Staff

Spring—one hour a week for sixteen weeks as arranged.

Lecture course presenting aspects of all the principles of ophthalmology.

447 *Clinic* — The Staff

Fall—as arranged.

During medical outpatient service, each student is given individual instruction in the ophthalmological aspects of systemic disease. University Hospital.

OTOLARYNGOLOGY

James Jerry McFarland, Jr., B.S., M.D., *Associate Clinical Professor of Otolaryngology, Executive Officer*

Catharine Birch, A.B., M.D., *Associate in Otolaryngology*

Jack Louis Levine, M.D., *Associate in Otolaryngology*

Morris Edward Krucoff, B.S., M.D., *Associate in Otolaryngology*

Willard Beecher Walters, B.S., M.D., *Associate in Otolaryngology*

Russel Smith Page, Jr., A.B., M.D., *Clinical Instructor in Otolaryngology*

Joseph Aziz Sabri, A.B., M.D., *Clinical Instructor in Otolaryngology*

William MacLohon Trible, A.B., M.D., *Clinical Instructor in Otolaryngology*

351 *Otolaryngology* The Staff

Spring—1 hour a week for fourteen weeks.

Lectures and demonstrations on anatomy, physiology, and diseases of the ear, nose, and throat.

354 *Bronchoscopy* The Staff

Spring—1 hour a week for two weeks.

A series of lectures on the fundamental principles and the use of instruments, including both the bronchoscope and esophagoscope.

355–56 *Clinic* The Staff

One and one-half hours a week in rotation as arranged during academic year.

Practical clinical instruction in the diagnosis and treatment of diseases of the ear, nose, and throat. D. C. General Hospital.

PATHOLOGY

Thomas Martin Peery, A.B., M.D., *Professor of Pathology, Executive Officer*
Daniel Leigh Weiss, A.B., M.D., *Clinical Professor of Pathology*
Frank Nelson Miller, Jr., B.S., M.D., *Associate Professor of Pathology*
William Newman, A.B., M.D., *Associate Professor of Pathology*
William Laverne Marsh, B.S., M.D., *Assistant Professor of Pathology*
Lois Irene Platt, A.B., M.D., *Clinical Instructor in Pathology*
David Arbiter, A.B., M.D., *Assistant in Pathology*
Willitm Oliver Green, Jr., A.B., M.D., *Assistant in Pathology*
John Harbeck Meeker, Jr., A.B., M.D., *Assistant in Pathology*
Dee Rich Parkinson, M.D., *Assistant in Pathology*
Herbert Bradley Taylor, B.S., M.D., *Assistant in Pathology*

Special Staff for Demonstrations

John Stewart Howe, A.B., M.D., *Assistant Clinical Professor of Pathology*
Erving Francis Geever, M.D., Ph.D., *Assistant Clinical Professor of Pathology*
Lorenz Eugene Zimmerman, A.B., M.D., *Associate in Pathology*
Raymond Georges Gottschalk, B.S., M.D., *Associate in Pathology*
Richard Emery Palmer, A.B., M.D., *Associate in Pathology*
William Francis Enos, A.B., M.D., *Clinical Instructor in Pathology*
Lester Walter Fix, M.D., *Clinical Instructor in Pathology*
Charles Barrie Cook, B.S., M.D., *Clinical Instructor in Pathology*
Frederick William Shillinger, B.S., M.D., *Clinical Instructor in Pathology*

Special Lecturers

Elson Bowman Helwig, B.S., M.D., *Chief, Pathology Division, Armed Forces Institute of Pathology*
Lent Clifton Johnson, B.S., M.D., *Pathologist, Armed Forces Institute of Pathology*

259–60 *Pathology*

Peery, Miller

Fall—9 hours a week; spring—3 hours a week.

General pathology of inflammations, degenerations, malformations, and neoplasms. Special pathology of the organs and specific diseases. The laboratory work consists of the gross and microscopic study of diseased tissue. Special emphasis is placed on the interrelationships of the various pathologic changes and their correlation with symptoms and physical signs.

261–62 *Necropsy* The Staff

Academic year—as arranged.

Students are required to attend and assist in the performance of necropsies at the University Hospital.

263–64 *Demonstrations in Pathology* Special Staff

Academic year—1 hour a week.

Gross specimens of representative cases from various hospitals are demonstrated and discussed.

267–68 *Seminars in Pathology* Special Lecturers

Academic year—as arranged.

Advanced lectures are presented as arranged on special topics in pathology.

270 *Forensic Pathology and Medical Jurisprudence* Miller

Spring—1 hour a week.

Forensic pathology, toxicology, chemistry, and immunology. The legal and ethical rights and responsibilities of physicians. Legal problems in medicine.

323–24 *Surgical Pathology I* Weiss

Academic year—1 hour a week.

Weekly conferences are held with the student group assigned to the surgical clerkship, reviewing current surgical specimens.

327–28 *Clinical Pathological Conferences I* The Staff

Academic year—1 hour a week.

Conferences are held at the School of Medicine. Case histories are presented and discussed by the students and members of the Staff. Clinical, laboratory, and necropsy findings are compared.

427–28 *Clinical Pathological Conferences II* The Staff

Academic year—1 hour a week.

Continuation of Pathology 327–28.

429–30 *Clinical Pathological Conferences III* The Staff

Academic year—1 hour a week.

Conferences are held at the University Hospital. Attendance is required of students during the medical clerkship there.

492 *Surgical Pathology II* Newman

Spring—1 hour a week.

A systematic study of the gross and microscopic changes in the organs and tissues commonly removed surgically.

493–94 *Pathology Clerkship (elective)* The Staff

Academic year—as arranged.

A limited number of students receive training in surgical pathology and necropsies in the laboratories of the University Hospital.

PEDIATRICS

Preston Alexander McLendon, B.S., M.D., *Professor of Pediatrics*
Margaret Mary Nicholson, A.B., M.D., *Clinical Professor of Pediatrics*
Edward Lewis, M.D., *Clinical Professor of Pediatrics*
William Staton Anderson, A.B., M.D., *Clinical Professor of Pediatrics*
Robert Harold Parrott, M.D., *Clinical Professor of Pediatrics*
Leroy Edward Hoeck, M.D., *Clinical Professor of Pediatrics*
Joseph Michael LoPresti, B.S., M.D., *Associate Professor of Pediatrics, Acting Executive Officer*
John Augustine Washington, B.S., M.D., *Associate Clinical Professor of Pediatrics*
Reginald Spencer Lourie, B.S., M.D., Med.Sc.D., *Associate Clinical Professor of Pediatric Psychiatry*
Margaret Frances Gutelius, A.B., M.D., *Assistant Professor of Pediatrics*
Mabel Harlakenden Grosvenor, A.B., M.D., *Assistant Clinical Professor of Pediatrics*
Aaron Nimetz, A.B., M.D., *Assistant Clinical Professor of Pediatrics*
George Maksim, M.D., M.S. in Ped., *Assistant Clinical Professor of Pediatrics*
William Allen Howard, A.B., M.D., *Assistant Clinical Professor of Pediatrics*
John Howell Peacock, B.S., M.D., *Associate in Pediatrics*
Maynard Irving Cohen, A.B., M.D., *Associate in Pediatrics*
Mary Katherine Laurence Sartwell, A.B., M.D., *Associate in Pediatrics*
Allan Bertram Coleman, M.D., *Associate in Pediatrics*
Charles Frederick Stiegler, A.B., M.D., *Associate in Pediatrics*
Hugh Gambel Clark, A.B., M.D., *Associate in Pediatrics*
Adrian Recinos, Jr., B.S., M.D., *Associate in Pediatrics*
Robert Edward Martin, M.D., *Associate in Pediatrics*
Charles Richard Webb, B.S., M.D., *Associate in Pediatrics*
William Stark, A.B., M.D., *Associate in Pediatric Psychiatry*
Archibald Rich MacPherson, A.B., M.D., *Associate in Pediatrics*
Thomas Elmer Reichelderfer, B.S., M.D., M.P.H., *Associate in Pediatrics*
Herbert Harold Diamond, M.D., *Clinical Instructor in Pediatrics*
Reginald Henry Mitchell, M.D., *Clinical Instructor in Pediatrics*
Robert Orr Warthen, M.D., *Clinical Instructor in Pediatrics*
Emilie Annabelle Black, B.S., M.D., *Clinical Instructor in Pediatrics*
Robert Harper Anderson, M.D., *Clinical Instructor in Pediatrics*
Warren Godfrey Preisser, A.B., M.D., *Clinical Instructor in Pediatrics*

Sanford Leon Leikin, M.D., *Clinical Instructor in Pediatrics*
Bennett Olshaker, A.B., M.D., *Clinical Instructor in Pediatric Psychiatry*
Harold Taylor Yates, M.D., *Clinical Instructor in Pediatrics*
Roger Bergstrom, M.D., *Clinical Instructor in Pediatrics*
George Joel Cohen, M.D., *Clinical Instructor in Pediatrics*
Milton Sanford Glatt, A.B., M.D., *Clinical Instructor in Pediatrics*
Marvin Irwin Mones, M.D., B.S., *Clinical Instructor in Pediatrics*
Gloria Eng, M.D., *Assistant in Pediatrics*
William Robert O'Reilly, B.S., M.D., *Assistant in Pediatrics*
Byron David Roseman, A.B., M.D., *Assistant in Pediatrics*

SPECIAL LECTURER

Myron Ezra Wegman, A.B., M.D., M.P.H., *Director, Division of Education and Training, Pan American Sanitary Bureau, Regional Office for the Americas of World Health Organization;* Pediatrics

256 *Pediatrics* McLendon and Staff

Spring—2 hours a week.

Lectures on physiology of the newborn, normal behavior, emotional and physical development, infant nutrition, diseases of the newborn, common anomalies and system illnesses of infancy and childhood. Medical School.

357–58 *Clinical Clerkship—General Pediatrics* LoPresti and Staff

Two weeks as arranged during academic year.

Introduction to clinical pediatrics. Emphasis on bedside discussion and group seminars including the newborn. Ward rounds. Five students in rotation. D. C. General Hospital.

359–60 *Clinical Clerkship—Contagious Diseases* LoPresti and Staff

Two weeks as arranged during academic year.

Conferences and bedside discussion on contagious and infectious diseases. Prevention and quarantine measures. Five students in rotation. D. C. General Hospital.

361–62 *Clinical Conferences I* McLendon and Staff

Academic year—1 hour a week.

Required. Presentation and discussion by students of current patient problems. D. C. General Hospital.

363–64 *Ward Rounds* Nicholson, LoPresti, and Staff

Academic year—as arranged.

Bi-weekly ward rounds, with students and Resident Staff. D. C. General Hospital.

365–66 *Psychiatry* Lourie and Staff

Academic year—as arranged.

Lectures on normal behavior and emotional development. Clinical case analysis.

457–58 *Clinical Clerkship* Anderson and Staff

Six weeks as arranged during academic year.

Full time, including assignment to night and holiday admissions. Case studies on wards under direct Resident supervision. Ward rounds with Staff and Residents. Twelve students. Children's Hospital.

459–60 *Outpatient Clinics* Gutelius and Staff

Academic year—as arranged.

Work in Medical and Specialty clinics including surgery, allergy, X-ray, child welfare, cardiology, dermatology, neurology, and child guidance. Children's Hospital.

461–62 *Clinical Pathological Conferences* The Staff

Academic year—1 hour a week.

Clinical and pathological discussion of recent patient history and laboratory data. Children's Hospital.

463–64 *Section Conferences* The Staff

Academic year—twice a week.

Discussion of clinical problems of diagnosis and treatment of current patients. Children's Hospital.

465–66 *Section Conferences* The Staff

Academic year—1 hour a week.

Surgical diagnosis, pre- and post-operative management. Children's Hospital.

467–68 *Clinical Conferences II* McLendon and Staff

Academic year—1 hour a week.

Required. Case presentation by students. Staff and student discussion of diagnosis and management. Medical School.

469–70 *Child Guidance and Development* Lourie

Academic year—as arranged.

Clerkship in fourth year including Well Baby Clinic. Group and class conferences.

PHARMACOLOGY

Paul Kenneth Smith, Ph.D., *Professor of Pharmacology, Executive Officer*

Ralph Grafton Smith, M.D., Ph.D., *Clinical Professor of Pharmacology*

Bernard Beryl Brodie, Ph.D., *Professorial Lecturer in Pharmacology*

Harold George Mandel, Ph.D., *Associate Professor of Pharmacology*

Clarke Davison, Ph.D., *Assistant Professor of Pharmacology*

Moreshwar Vithal Nadkarni, Ph.D., *Assistant Research Professor of Pharmacology*

Eberhard Georg Trams, Ph.D., *Assistant Research Professor of Pharmacology*

Paul William Müller, Dr. sc. nat., *Assistant Research Professor of Pharmacology*

Claudia Sebeste Prickett, Ph.D., *Assistant Clinical Professor of Pharmacology*

Nicholas Michael Cambosos, M.S., *Research Fellow in Pharmacology*

Ariel Cahill Hollinshead, Ph.D., *Research Fellow in Chemotherapy*

Joseph Kenneth Inscoe, M.S., *Teaching Fellow in Pharmacology*

Arthur Michaelson, M.S., *Research Fellow in Pharmacology*

Ernest Frederick Zimmerman, B.S., *Teaching Fellow in Pharmacology*

Robert Sanford Rozman, B.S., *Research Fellow in Pharmacology*

Special Lecturer in Pharmacology

William Vincent Crahan Leahy, Ph.D., *Assistant Chief, Radioisotope Service, Veterans Administration Hospital, Washington, D. C.*

261 *Pharmacology* (5)

Fall—5 hours a week. The Staff

Lectures and conferences concerning the interaction of drugs and biological systems as a basis for the rational therapy of disease. Open to qualified nonmedical students.

262 *Chemotherapy* (1)

Spring—1 hour a week. The Staff

Continuation of Pharmacology 261.

263 *Pharmacology Laboratory* (1)

Fall—3 hours a week. The Staff

Laboratory instruction and demonstrations designed to complement Pharmacology 261. Open to qualified nonmedical students.

267–68 *Pharmacological Research* (arr.) The Staff

Academic year—as arranged.

Primarily for those properly qualified graduate and medical students seeking careers in pharmacology.

269–70 *Pharmacology Seminar* (1–1) The Staff

Academic year—2 hours a week.

Recent advances in pharmacology. For those interested in pharmacological research. Open to qualified nonmedical students.

279–80 *Special Methods in Research* (arr.) The Staff

Academic year—as arranged.

A course to familiarize the student with advanced biochemical, microbiological, and physiological methods employed in pharmacological investigations. Open to qualified nonmedical students.

299–300 *Thesis* (3–3) The Staff

Academic year—as arranged.

Required of Master of Arts and Master of Science candidates.

339–40 *Therapeutic Conferences I* Staff of Pharmacology and Medicine

Academic year—1 hour a week.

Conferences designed to emphasize the application of pharmacological principles to the problems of clinical medicine.

PHYSICAL MEDICINE AND REHABILITATION

Charles Samuel Wise, B.S., M.D., *Professor of Physical Medicine and Rehabilitation, Executive Officer*

John Watt, Jr., M.D., *Assistant Clinical Professor of Physical Medicine and Rehabilitation*

Alvin Knudson, B.S., M.D., *Associate in Physical Medicine and Rehabilitation*

Charles Jerome Everding, B.S., M.D., *Clinical Instructor in Physical Medicine and Rehabilitation*

Jessie Elizabeth Fair, M.C.S.P., R.P.T., *Assistant in Physical Medicine and Rehabilitation*

Kyoko Ishiyama, B.S., R.P.T., *Assistant in Physical Medicine and Rehabilitation*

150 *Elements of Physical Medicine* The Staff

Spring—as arranged.

In arrangement with the Anatomy Department, lectures and demonstrations of the various tests and measurements are employed in the evaluation of physical disability.

352 *Advanced Physical Medicine* The Staff

Spring—1 hour a week.

Lectures and demonstrations concerning the various techniques, clinical applications of physical medicine and rehabilitation to be integrated with the teaching of the associated medical and surgical specialties.

467–68 *Clinical Studies* The Staff

Academic year—as arranged.

Clinical teaching and demonstration at the University Hospital.

485 *Research* (arr.) The Staff

Fall—as arranged.

Open to medical students and qualified nonmedical students.

PHYSIOLOGY

Chester Elwood Leese, Ph.D., *Fry Professor of Physiology*
Charles Adrian Michael Hogben, M.D., Ph.D., *Professor of Physiology Executive Officer*
William Rankin Duryee, Ph.D., *Research Professor of Physiology*
Joseph William Still, M.D., M.P.H., *Assistant Professor of Physiology*
Eugene Marshall Renkin, Ph.D., *Assistant Professor of Physiology*
Habeeb Bacchus, Ph.D., M.D., *Assistant Clinical Professor of Physiology*
Hyman Erwin Steinman, M.D., *Lecturer in Physiology*
Talmage Gordon Hiebert, Ph.D., *Lecturer in Physiology*
Charles Arthur Toompas, Ph.D., *Instructor in Physiology*
Louis Pat Munan, M.S., *Associate in Physiology*
Francis DeSales Woidich, B.S., M.D., *Associate in Physiology*
Agnes Burtnieks, B.S., *Fellow in Physiology*
Bernell Elwyn Baldwin, A.B., *Fellow in Physiology*

115 *Physiology* Leese, Toompas

Fall: section A—Tues. and Thurs., 8:45 to 10:00 A.M.; section B—Tues. and Thurs., 5:10 to 6:25 P.M.

Lectures for nonmedical students covering the fundamentals of physiology in its various subdivisions. Prerequisite: one year of general science or one semester of a biological science.

117 *Experimental Physiology* (1) Toompas

Fall—Sat., 9:10 to 12:00 A.M.

Laboratory exercises in the fundamentals of physiology, for nonmedical students. Prerequisite or concurrent registration: Physiology 115 or the equivalent. Material fee, $18.

120 *Physiology of Endocrine Activity* (2) Munan

Spring—Tues. and Thurs., 6:10 P.M.

For nonmedical students. The circulatory, metabolic, reproductive, growth, and other adaptations, immediate and long term, accompanying and affecting endocrine activity. Prerequisite: Physiology 115 or the equivalent.

130 *The Psycho-physiology of Personality* (2) Leese

Spring—Tues. and Thurs., 5:10 P.M.

For nonmedical students. Lectures on the genesis and expression of personality, with emphasis on the physiological approach. Prerequisite: Physiology 115 or the equivalent and general psychology.

149–50 *Medical Physiology* Hogben and Staff

Fall—4 hours a week; spring—14 hours a week.

Lectures and laboratory work in all divisions of Physiology. This course is designed for medical students.

211–12 *Problems in Physiology* (arr.) Leese

Academic year—as arranged.

For nonmedical graduate students. Open to undergraduate students with the approval of the Department. Prerequisite: Physiology 115 and 117, or the equivalent.

221–22 *Physiology Seminar* (1–1) Still

Academic year—1 hour a week, as arranged.

For nonmedical students undertaking graduate work in physiology. Prerequisite: Physiology 115 and 117, or the equivalent.

231–32 *Advanced Physiology* (12) Renkin and Staff

Fall—4 hours a week; spring 14 hours a week, as arranged.

For nonmedical graduate students. Lectures and laboratory work in all major areas of physiology. In exceptional cases, study of a restricted area, such as neurophysiology, will be sanctioned for partial credit. Material fee, $42.

241 *Advanced Physiology of the Cell* (1) Duryee

Fall—1 hour a week, as arranged.

For nonmedical graduate students. Special emphasis on biophysics and the biochemistry of the cell in relation to organ function.

295–96 *Research* (arr.) The Staff

Academic year—as arranged.

299–300 *Thesis* (3–3) The Staff

PSYCHIATRY

Winfred Overholser, A.B., M.D., Sc.D., L.H.D., *Professor of Psychiatry, Executive Officer*

Addison McGuire Duval, M.D., *Clinical Professor of Psychiatry*

Leon Yochelson, A.B., M.D., *Clinical Professor of Psychiatry*

Henry Prather Laughlin, B.S., M.D., *Associate Clinical Professor of Psychiatry*

Marshall deGraffenried Ruffin, B.S., M.D., *Associate Clinical Professor of Psychiatry*

Joseph Eugene Rankin, B.S., M.D., *Assistant Professor of Psychiatry*

Sidney Berman, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Morris Kleinerman, Ch.D., M.B., *Assistant Clinical Professor of Psychiatry*

Elmer Klein, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Anna Coyne Todd, A.B., M.D., *Assistant Clinical Professor of Psychiatry*

Norman Taub, B.S., M.D., *Assistant Clinical Professor of Psychiatry*

Harold Corson, M.D., *Assistant Clinical Professor of Psychiatry*

Anna Genevieve McEldowney, A.B., M.D., *Associate in Psychiatry*

Sarah Shtoffer Tenenblatt, A.B., M.D., *Associate in Psychiatry*

David Eden, A.B., M.D., *Associate in Psychiatry*

Robert Milton Greenberg, A.B., M.D., *Associate in Psychiatry*

Helen Pallister, Ph.D., *Associate in Psychiatry (Psychology)*

Christopher Theodore Bever, A.B., M.D., *Associate in Psychiatry*

Warren Charles Johnson, B.S., M.D., *Associate in Psychiatry*

Richard Allan Rogers, B.S., M.D., *Clinical Instructor in Psychiatry*

John Anthony Farrell, M.D., *Clinical Instructor in Psychiatry*

Wilmer Deaver Kehne, A.B., M.D., *Clinical Instructor in Psychiatry*

Herman Arnold Meyersburg, B.S., M.D., *Clinical Instructor in Psychiatry*

Samuel Chrabolowski Gordon, M.D., *Clinical Instructor in Psychiatry*

Harold Bernard Lehrman, A.B., M.D., *Clinical Instructor in Psychiatry*

Randolph Adams Frank, A.B., M.D., *Clinical Instructor in Psychiatry*

Maxwell Boverman, A.B., M.D., *Clinical Instructor in Psychiatry*

Helen Glick Pearcy, A.B., M.S.W., *Clinical Instructor in Psychiatry (Social Work)*

Alan McCulloch Drummond, B.S., M.D., *Clinical Instructor in Psychiatry*

Leslie Elwood Sanders, A.B., M.D., *Assistant in Psychiatry*

165 *Dynamics of Personality Development* Berman
Fall—1 hour a week.

An orientation course in the anatomical, physiological, and psychological growth and development of personality. Consideration of characteristics of structure, function, and development of the psyche leading to normal behavior as a basis for the study of the pathological. Evaluation of interpersonal relationships.

178 *Psychopathology* Rankin
Spring—1 hour a week.

Manifestations and understanding of various mental mechanisms and abnormal reaction-types, preceded by history of development of psychopathology and illustrated with case material.

266 *Psychiatry* Overholser
Spring—1 hour a week.

History, etiology, symptoms, course, and treatment of the major psychoses with emphasis on the dynamics involving the person as a whole.

268 *Demonstration Clinics* McEldowney, Tenenblatt
Spring—3 hours a week.

Presentation of clinical cases of major mental illnesses and primary behavior disturbances, correlating with Psychiatry 266. Each student examines patients under supervision. St. Elizabeths and D. C. General hospitals.

272 *Psychosomatic Aspects of General Medicine* Ruffin
Spring—1 hour a week.

Somatic disorders of psychogenic origin. The role of personality reactions in functional and organic disorders.

324 *Psychoneurosis* Laughlin
Spring—1 hour a week.

Etiology, psychopathology, clinical aspects, and treatment of various types of psychoneuroses. Medical Conference Room, D. C. General Hospital.

431–32 *Clinical Clerkship* The Staff
Three weeks divided service as arranged during academic year.

Supervised examination, diagnosis, and treatment of ambulatory borderline cases in University Hospital and hospitalized cases in St. Elizabeths Hospital. Conferences for discussion of cases. Clinical application of psychiatric principles to general medical practice is stressed. University Hospital Inpatient and Outpatient Psychiatric clinics and St. Elizabeths Hospital.

RADIOLOGY

William Woodrow Stanbro, M.D., *Professor of Radiology, Executive Officer*
Charlotte Patricia Donlan, A.B., M.D., *Associate Clinical Professor of Radiology*
Solomon Rodney Bersack, B.S., M.D., *Assistant Clinical Professor of Radiology*
Harry Jay Kicherer, M.D., *Assistant Clinical Professor of Radiology*
Alvin Charles Wyman, A.B., M.D., *Associate in Radiology*
Herman Litwer, M.D., *Associate in Radiology*
George Tievsky, M.D., *Clinical Instructor in Radiology*
Uthai Vincent Wilcox II, M.D., *Clinical Instructor in Radiology*
Nan Poppel Van Wagenen, B.S., M.D., *Clinical Instructor in Radiology*
Charles Malcolm Weber, M.D., *Clinical Instructor in Radiology*
Emmett Monroe Cooper, M.D., *Assistant in Radiology*
Zeki Erim, M.D., *Assistant in Radiology*
Urszula Nitch, M.D., *Assistant in Radiology*
Chin Woo Park, M.D., *Assistant in Radiology*
Roger Hall Shannon, A.B., M.D., *Assistant in Radiology*

115–16 *Anatomy* — The Staff

Academic year—as arranged.

Correlation of gross and Roentgen anatomy.

220 *Principles of Radiology* — The Staff

Spring—1 hour a week.

Lectures and discussions.

313 *Advanced Radiological Diagnosis* — The Staff

Fall—as arranged.

Lectures and discussions.

421–22 *Clinical Studies* — The Staff

Students are assigned to the X-ray Department in rotation on a full-time basis for a specific period.

SURGERY

Brian Blades, A.B., M.D., *Professor of Surgery, Executive Officer*
Arch Lockhart Riddick, B.S., M.D., *Clinical Professor of Surgery*
John Gordon Lee, A.B., M.D., C.M., Med. Sc.D., *Clinical Professor of Surgery*
Herbert Hermann Schoenfeld, M.D., *Associate Clinical Professor of Surgery*
Alec Horwitz, M.S., M.D., *Associate Clinical Professor of Surgery*
William Stanley McCune, A.B., M.D., *Associate Clinical Professor of Surgery*
Vincent Michael Iovine, B.S., M.D., *Associate Clinical Professor of Surgery*
Owen Gwathmey, A.B., M.D., *Assistant Professor of Surgery*
Howard Clemeth Pierpont, A.B., M.D., *Assistant Professor of Surgery*
Benjamin Franklin Dean, Jr., M.S., M.D., *Assistant Clinical Professor of Surgery*
Carl Berg, M.D., *Assistant Clinical Professor of Orthopedic Surgery*
Calvin Trexler Klopp, A.B., M.D., *Assistant Clinical Professor of Surgery*
Julius Salem Neviaser, A.B., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
Jerome Blaine Harrell, M.D., *Assistant Clinical Professor of Surgery*
Leonard Theodore Peterson, B.S., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
John Pletch Adams, B.S., M.D., *Assistant Clinical Professor of Orthopedic Surgery*
Gordon Sparks Letterman, B.S., M.D., *Assistant Clinical Professor of Surgery*
William Ross Morris, M.D., *Associate in Surgery*
Jacob Joseph Weinstein, B.S., Phar.G., M.D., *Associate in Surgery*
William Carey Meloy, M.D., M.S. in Med., *Associate in Surgery*
Edward Alexander Cafritz, M.D., *Associate in Surgery*
Karl Hayden Wood, Phar.G., D.D.S., *Associate in Dental Surgery*
Isabella Harrison, A.B., M.D., *Associate in Surgery*
Henry Leon Feffer, A.B., M.D., *Associate in Orthopedic Surgery*
ames Richard Thistlethwaite, B.S., M.D., *Associate in Surgery*
Paul Charles Adkins, A.B., M.D., *Associate in Surgery*
Bernard Michael Tully, B.S., M.D., *Instructor in Surgery*
Crenshaw Douglas Briggs, B.S., M.D., *Clinical Instructor in Surgery*
oseph Francis Conlon, D.D.S., *Clinical Instructor in Dental Surgery*
Duane Case Richtmeyer, A.B., M.D., *Clinical Instructor in Surgery*

Leon Gerber, M.D., *Clinical Instructor in Surgery*
Thomas Bradley, A.B., M.D., *Clinical Instructor in Surgery*
Ernest Alva Gould, B.S., M.D., *Clinical Instructor in Surgery*
Austin Bertram Rohrbaugh, Jr., M.D., *Clinical Instructor in Orthopedic Surgery*
Marvin Hayne Kendrick, A.B., M.D., *Clinical Instructor in Surgery*
Brooks Gideon Brown, B.S., M.D., *Clinical Instructor in Surgery*
John Decator Hoyle, B.S., M.D., *Clinical Instructor in Surgery*
Robert Roland Smith, B.S., M.D., *Clinical Instructor in Surgery*
Norman Harry Isaacson, A.B., M.D., *Clinical Instructor in Surgery*
Charles Stanley White, Jr., B.S., M.D., *Clinical Instructor in Surgery*
Dennis Parfrement McCarty, M.D., *Clinical Instructor in Surgery*
John Mark Keshishian, M.D., *Clinical Instructor in Surgery*
Maxine Ann Schurter, A.B., M.D., *Clinical Instructor in Surgery*
Theodore Crandall Alford, A.B., M.D., *Clinical Instructor in Surgery*
William Albert Spencer, A.B., M.D., *Clinical Instructor in Surgery*
Emmett Russell Hall, Jr., M.D., *Fellow in Surgery*
James Davis, M.D., *Assistant in Surgery*
Richard Keslar Harkcom, B.S., M.D., *Assistant in Surgery*
Walter Rolfe Lofmark, M.D., *Assistant in Surgery*
Robert Carney Luckey, A.B., M.D., *Assistant in Surgery*
Howell Douglas Miller, M.D., *Assistant in Surgery*
Gene Moore, M.D., *Assistant in Surgery*
Robert Peter Riker, B.S., M.D., *Assistant in Surgery*
Jacob Rosenweig, B.S., M.D., C.M., *Assistant in Surgery*
Neofytos Theodore Tsangaris, M.D., *Assistant in Surgery*
Robert Edwin Williams, M.D., *Assistant in Surgery*

101–2 *Surgical Anatomy I* Surgery and Anatomy Staffs

Academic year—1 hour alternate weeks, as arranged.

Clinics illustrating relationship between gross anatomy and clinical surgery. University Hospital. The Staff

280 *Introduction to Surgery*

Spring—1 hour a week.

Lectures and recitations covering the field of general surgery. The Staff

284 *Surgical Physiology*

Spring—2 hours a week.

A clinical and laboratory course with particular emphasis on applied physiology. Weiss

323–24 *Surgical Pathology I*

Academic year—1 hour a week.

Weekly conferences are held with the student group assigned to the surgical clerkship, reviewing surgical specimens.

373–74 *Clinical Clerkship I* The Staff

Academic year—as arranged.

The student is assigned and required to work up thoroughly the cases for diagnosis and treatment. D. C. General Hospital.

375–76 *Outpatient Surgical Clinic* The Staff

Forty hours as arranged during academic year.

Surgical clinic. D. C. General Hospital.

377 *Fractures and Orthopedics* The Staff

Fall—1 hour a week.

Lectures covering the field of fractures and orthopedics. D. C. General Hospital.

379–80 *Lectures in Surgery* The Staff

Academic year—1 hour a week.

D. C. General Hospital.

383–84 *Surgical Clinic* Blades

Academic year—1 hour a week.

Demonstration of various surgical diseases to the entire class. University Hospital.

473–74 *Clinical Clerkship II* The Staff

Academic year—in rotation.

Six weeks, University Hospital; three weeks, Mt. Alto Hospital.

479–80 *Surgical Staff Conferences* The Staff

Academic year—Wednesday as arranged.

University Hospital.

483–84 *Surgical Ward Rounds* Blades

Academic year—1 hour a week.

Demonstration of various surgical diseases to fourth-year clerks. University Hospital.

491 *Surgical Anatomy II* Horwitz and Staff

Fall—1 hour a week for twelve weeks in rotation.

Lectures for fourth-year clerks. University Hospital.

492 *Surgical Pathology II* Newman

Spring—1 hour a week.

A systematic study of the gross and microscopic changes in the organs and tissues commonly removed surgically.

UROLOGY

Frederick A. Reuter, M.D., *Professor of Urology, Executive Officer*
Thomas Carlton Thompson, B.S., M.D., *Clinical Professor of Urology*
Edward Egner Ferguson, M.D., *Associate Clinical Professor of Urology*
Leon Richard Culbertson, B.S., M.D., *Associate Clinical Professor of Urology*
William Dabney Jarman, B.S., M.D., *Assistant Clinical Professor of Urology*
Gilbert Ottenberg, A.M., M.D., *Associate in Urology*
Gordon Rhodes MacDonald, B.S., M.D., *Associate in Urology*
Frederick Turner Reuter, M.D., *Associate in Urology*
Herbert DeGrange Wolff, Jr., M.D., *Clinical Instructor in Urology*
Hamilton Peacock Dorman, B.S., M.D., *Clinical Instructor in Urology*
Arthur Wilets, A.B., M.D., *Clinical Instructor in Urology*

395–96 *Clinic* — The Staff

Clinical teaching and demonstrations on the care of urological cases with special emphasis on the pre- and post-operative management. Operative clinics and clinical teaching. D. C. General Hospital.

397 *Urology* — F. A. Reuter and Staff

Fall—1 hour a week.

Lectures covering the entire field of urology including diagnosis, treatment, and morbid pathology.

495–96 *Clinic* — F. A. Reuter and Staff

Three hours a week, in rotation, as arranged during academic year.

Clinical demonstrations, teaching in the Outpatient Department, and urological X-ray conferences, with special attention given to diagnostic procedures. University Hospital.

THE SCHOOL OF MEDICINE RECORD

1957–58

DEGREES CONFERRED

DOCTOR OF MEDICINE

JUNE 5, 1957

Martha Odette Alarcon A.B. 1953, Wellesley College	Guatemala
Barrett Christian Andersen A.B. 1953, San Jose State College	Calif.
William Bruce Anderson (With distinction) A.B. 1950, Stanford University	Calif.
William Vale Applegate A.B. 1953, University of California	Calif.
John Allan Arness A.B. 1953, The George Washington University	Va.
Vernon Henry Balster A.B. 1947, Concordia Theological Seminary A.B. 1954, The George Washington University	Ill.
George Wendell Bauer, Jr. (With distinction)	Calif.
Robert Andrew Beach B.S. 1951, University of Maryland	Md.
Julius Ludwig Bedynek, Jr.	Calif.
Leonard Berger B.S. 1953, Queens College	N.Y.
Stuart Paul Bernstein A.B. 1953, New York University	N.Y.
Norman Kay Bohrer (With distinction)	D.C.
George Aristotle Boinis B.S. 1951, Franklin and Marshall College	Va.
Samuel Vladimir Boor A.B. 1954, The George Washington University	Pa.
David John Buran A.B. 1953, Carleton College	Va.
Rodney William Burgoyne B.S. 1954, Utah State University	Idaho
Semour Byer B.S. 1951, M.S. 1953, The George Washington University	Conn.
Lawrence Barrows Carr A.B. 1953, Stanford University	Calif.
Vito John Ciminello	N.J.
Gilbert Reed Clark B.S. 1953, University of Maryland	Md.
Louis Kenneth Countryman A.B. 1953, University of California	Calif.
Mervyn Jack Covey	Calif.
Donald William Cox B.S. 1953, Mount Union College	D.C.
Robert Harold Craft B.S. 1951, The George Washington University	Md.
James New Craigie	N.Y.
Jerome Henry Cripe B.S. 1953, Indiana University	Ind.
Clifford Noble Cutler B.S. 1955, University of Utah	Utah
Elvin James Cutler, Jr. B.S. 1953, Idaho State College	Idaho
Jere Jack Daum B.S. 1953, Franklin and Marshall College	Pa.
Bruce Karl Defiebre, Jr. B.S. 1953, University of Maryland	Calif.
Robert Verne Despain	Utah
William Henry Devries	N.Y.
John Joseph Di Ré (With distinction) B.S. 1953, McGill University	N.Y.
Leonard Benjamin Di Ré B.S. 1953, McGill University	N.Y.
David George Dixon B.S. 1953, Brigham Young University	Calif.
Orville Wright Donnelly (With distinction) A.B. 1943, Swarthmore College M.S. 1951, The George Washington University	Md.
Michael Mann Duffy A.B. 1953, Dartmouth College	D.C.
John Eden A.B. 1953, New York University	N.Y.
James Ethelmer Ellsworth, Jr.	N.Y.
Burton Seymour Epstein A.B. 1954, The George Washington University	D.C.
Suhayl Jamil Farha B.S. 1953, West Virginia University	Lebanon
Morris Feitel (With distinction)	N.J.
Alexis Oswaldo Fernandez B.S. 1953, Georgetown University	Puerto Rico
Edward Stitt Fleming (With distinction) A.B. 1951, University of North Carolina A.M. 1952, University of Texas	Md.
William Bruce Galbraith B.S. 1953, Arizona State College, Tempe	Ariz.
Marcus Ronald Gilliss A.B. 1953, Humboldt State College	D.C.
Edward Harvey Glazier B.S. 1952, Wheaton College	Ill.
James Hartman Glenn A.B. 1953, Duke University	D.C.
Walter Erwin Goozh A.B. 1954, The George Washington University	D.C.
John Thomas Hagenbucher B.S. 1950, Philadelphia College of Pharmacy and Science	N.J.
Wayne Stanton Hamblin A.B. 1950, Brigham Young University	Ariz.
Marie Adele Hanaché A.B. 1953, College of New Rochelle	N.Y.
Kermit Henry Hanson A.B. 1953, Carroll College	Wis.
Clarence Hardman Hodge	Calif.
Wellington Hung B.S. 1953, American University	D.C.

Willis Layne Irwin Pa.
B.S. 1953, Grove City College
Edward Hiroshi Izawa Hawaii
A.B. 1951, University of Texas
M.S. 1952, University of Hawaii
Ralph Jacobsen N.Y.
A.B. 1953, New York University
Stanley Martin Kirson D.C.
A.B. 1957, The George Washington University
Angelo G. Lurus Idaho
B.S. 1953, University of Idaho
Merlin Harold Mauk Calif.
A.B. 1949, Pacific Union College
Henry Leonard McCorkle Md.
A.B. 1950, University of Texas
A.M. 1951, The George Washington University
James Nelson McNash W.Va.
A.B. 1953, West Virginia University
John Enright McNeal Va.
(With distinction)
A.B. 1952, University of Miami
William Fitzgerald Morrissey Va.
A.B. 1952, University of Virginia
Everett Cole Mosley Miss.
A.B. 1953, Vanderbilt University
Andre Joseph Nahmias D.C.
A.B. 1950, A.M. 1952, University of Texas
M.P.H. 1953, University of Michigan
Brigitte Buchmann Nahmias D.C.
A.B. 1954, The George Washington University
Charles Richard Nixon Idaho
B.S. in Phar. 1950, Idaho State College
Robert Keel Norton N.M.
(With distinction)
Leonard Daniel Pace N.Y.
B.S. 1953, The George Washington University
Leonard Irwin Plaine N.Y.
A.B. 1953, Harvard University
Stylianos Demetrios Protonotarios
B.S. 1951, Wagner Memorial Lutheran College
A.M. 1951, Ph.D. 1953, The George Washington University
Roberte Jibrail Raymond
B.S. 1953, College of Mount St. Vincent
Randi Veie Rosvoll
(With distinction)
B.S. 1953, American University
George Fleming Sengstack
(With distinction)
B.S. 1953, The George Washington University
Ronald Walter Smith
B.S. 1953, University of Maryland
Parviz Sorouri
A.B. 1951, Temple University
M.S. 1952, University of Pennsylvania
Francis Rene Van de Carr, Jr.
Louis Frederick Warrick, Jr. D.C.
A.B. 1954, The George Washington University
George Erhardt White D.C.
A.B. 1954, The George Washington University
Donald Wallis Wizer Pa.
(With distinction)
A.B. 1954, University of Illinois
Joseph Bernd Woodson Va.
B.S. 1944, Swarthmore College
Ronald Harlan Woody, Jr. Pa.
(With distinction)
A.B. 1954, The George Washington University
Joseph Peter Yut Mo.
(With distinction)
B.S. 1954, University of Pittsburgh
Robert Lloyd Zahn Wa
B.S. 1950, Missouri Valley College
Rolland Charles Ziehl D.C.
B.S. 1953, The George Washington University
Nicholas Louis Zouras
B.S. 1953, Georgetown University

STUDENTS REGISTERED IN THE SCHOOL OF MEDICINE*

1957–58

A

Abdu, Rashid Ali (II) A.B. 1956, Lafayette College	Va.
Akbarian, Mohammed (I)	D.C.
Albert, Bernard Leon (IV) B.S. 1954, Franklin and Marshall College	N.J.
Alley, Richard Hadley, Jr. (II) A.B. 1956, Occidental College	Oreg.
Altekruse, Joan Morrisey (II) A.B. 1949, Vassar College	N.Y.
Alter, Burton Norman (I)	Conn.
Altman, Robert Lee (I) B.S. 1957, Westminster College	Md.
Alvig, Olav Henry (IV) B.S. 1951, The George Washington University	Va.
Anderson, Arthur James (I)	D.C.
Ankeny, Scott Wayne (I) A.B. 1954, University of California	D.C.
Anstine, Lucille Alberta (II) B.S. 1956, The George Washington University	Pa.
Antoniou, Lucy Denise (I)	D.C.
Apter, Ronald Alan (IV)	D.C.
Atwood, Roger Morris (I) A.B. 1957, Carleton College	Minn.

B

Baer, Howard Samuel (I) A.B. 1957, Wesleyan University	Conn.
Baker, Donald Rigdon (II)	Calif.
Banfield, William Landon (IV) A.B. 1954, Princeton University	Md.
Barnhart, Robert Miller (I)	Md.
Barr, Arnold Benjamin (III) A.B. 1956, The George Washington University	D.C.
Barr, Mason, Jr. (I) A.B. 1957, Haverford College	D.C.
Barrett, John William (IV)	Pa.
Barton, Alan Brent (III) A.B. 1955, University of California at Los Angeles	Calif.
Bartone, John Norman (IV) B.S. 1954, Western Reserve University	D.C.
Beeman, John Albert (I)	Calif.
Behnke, Edward August (III)	Va.
Belinsky, Samuel Michael (III) A.B. 1955, University of Bridgeport	Va.
Bergera, Jerald James (IV)	Utah
Bertsch, Dale Roger (I)	Va.
Blodgett, John Russell, Jr. (III)	D.C.
Boelke, Donald Richard (IV) A.B. 1954, Carleton College	Wis.
Bolter, Delano Woodrow (I)	Calif.
Bonbrest, Helen Constance (II)	Md.
Bond, Richard Lee (I)	D.C.
Bondareff, Erwin Allen (III) B.S. in Phar. 1952, The George Washington University	Md.
Bortnick, Ronald Jack (III) A.B. 1956, The George Washington University	D.C.
Bowen, Gerald Thomas (II)	Va.
Bowen, Violet Ella (I)	W.Va.
Brede, Edward Herb (II) A.B. 1956, Yale University	Ohio
Brown, Harry Silsby, Jr. (III) A.B. 1952, University of Missouri	Mo.
Bru, Norman James (II) A.B. 1956, University of California	Calif.
Bruhn, John Richard (II) A.B. 1956, Carleton College	Ala.
Bryant, Robert Singleton (IV) B.S. 1954, The George Washington University	D.C.
Buchanan, Keith Elwyn (II) B.S. 1956, University of Wisconsin	Wis.
Bunke, John William (IV)	Wis.
Burgess, Mary Josephine (II) A.B. 1956, Catholic University of America	N.Y.

C

Call, Richard Grant (II)	Idaho
Calvo, Robert Camilo (I) B.S. 1956, Rutgers University	N.J.
Cameron, Don Bruce (II) A.B. 1952, University of California at Los Angeles	Va.
Campbell, Constance Joan (I)	Va.
Campbell, John David II (IV) A.B. 1954, University of California at Los Angeles	Calif.
Cantrell, Robert Wendell (II)	Mo.
Carlson, David Roland (II) B.S. in Phar. 1953, Drake University	Ill.
Carter, Robert Lee (II) A.B. 1955, Washington and Jefferson College	W.Va.
Case, Arnold Lowell (II) A.B. 1956, Yale University	Va.
Castell, Donald Overton (II)	Md.
Ceremsak, Robert Joseph (II) A.B. 1956, Catholic University of America	D.C.
Cerny, Matthew John, Jr. (IV) A.B. 1954, Johns Hopkins University	N.Y.
Chambers, Clyde Frank, Jr. (I)	Md.
Chirls, Irving Allen (II) A.B. 1947, Harvard University	N.J.
Clay, John Peter (I) A.B. 1956, Occidental College	Calif.

---

* The year of registration in the Medical School is indicated in parentheses following the name of the student.

Clevenger, Robert William (II) Pa.
A.B. 1956, Duke University
Cohan, Allan Barry (I) D.C.
A.B. 1957, The George Washington University
Cole, Charles Ackerson (IV) Calif.
B.S. 1945, Ohio State University
Cole, Sherwood Allan (II) N.Y.
B.S. 1956, University of Buffalo
Colmey, Thomas Grosvenor (I) Ill.
A.B. 1957, Duke University
Conrad, Justin Lyle (I) N.D.
A.B. 1957, Northwestern University
Contis, George Peter (IV) Pa.
A.B. 1954, University of Pittsburgh
Covell, Jack Phillip (I) Ind.
Cowley, Irvin Jack (I) Utah
Cozzarelli, James Dominick (III) N.J.
B.S. 1955, St. John's University
Crabb, Richard Bruce (III) Pa.
A.B. 1957, Duke University
Cunningham, Edward Earl (II) Md.
A.B. 1952, Washington and Jefferson College
M.S. 1954, Duquesne University

D

Dahlke, Francis Gene (I) Wis.
Daily, Charles Dennis, Jr. (II) D.C.
Daines, Lowell Raymond (IV) Utah
B.S. 1955, Utah State Agricultural College
Daines, Paul Hatch (IV) Utah
B.S. 1954, Utah State Agricultural College
Dancer, Jack T. (I) Ariz.
B.S. 1957, University of Arizona
Davajan, Val (II) Calif.
A.B. 1956, Stanford University
Day, John Ronald, Jr. (IV) Md.
B.S. 1955, University of Maryland
DeGroot, Jerry (II) Wash.
A.B. 1951, University of Washington
Deitch, Ronald Stuart (IV) D.C.
A.B. 1954, Washington and Lee University
DeMordaunt, Paul Roger (I) Idaho
DeQuattro, Vincent Louis (II) Calif.
B.S. 1955, University of California
Derro, Robert Arthur (I) Mass.
A.B. 1954, Harvard University
DeVita, Vincent Theodore (I) Va.
B.S. 1957, College of William and Mary
Dickerson, Ruth (III) D.C.
A.B. 1956, The George Washington University
Dinsmore, Paul Rich (IV) Maine
A.B. 1954, University of Maine
Dodge, Byron (IV) Wash.
B.S. 1954, University of Washington
Dolan, John Albert (I) Md.
B.S. 1957, Georgetown University
Downey, Fred McEwen (III) D.C.
A.B. 1956, Duke University
Draper, Harold Wesley (IV) N.Y.
A.B. 1954, Taylor University
Droescher, John Joseph, Jr. (II) D.C.
A.B. 1951, Colgate University
Dunn, Ronald Edward (I) Idaho
B.S. 1957, University of Idaho
Duxbury, William John (II) Va.
B.S. in Phar. 1952, University of Wisconsin

E

Edelstein, Richard (IV) N.Y.
A.B. 1952, Cornell University
Egeland, Robert E. (II) Md.
A.B. 1956, State University of Iowa
Eisenstein, Elliot Martin (II) N.J.
B.S. 1956, Franklin and Marshall College
Erickson, Clark Allen (IV) Wis.
A.B. 1954, Ripon College
Eufemio, Michael Anthony (II) N.Y.
A.B. 1956, Cornell University
Evers, Joseph Adolph (II) Calif.
B.S. 1953, University of California

F

Faust, Arland Kenneth (III) Kans.
A.B. 1955, University of Kansas
Fazekas, Victor (II) Hungary
Feroli, Edward Joseph (II) Mass.
B.S. 1955, Massachusetts College of Pharmacy
Fleming, Peter Alan (I) Calif.
A.B. 1956, San Diego State College
Floyd, Harold Leopold (II) Md.
Fox, John LeRoy (III) D.C.
Freedman, Irwin Stanley (III) Md.
A.B. 1955, Haverford College
Frich, John Carl (III) Pa.
Fried, Morton George (I) N.Y.
A.B. 1957, New York University

G

Gallant, Milton (I) N.J.
A.B. 1957, Rutgers University
Gantz, Frank Elwin, Jr. (II) D.C.
Ganz, Joel S. (I) N.Y.
B.S. 1957, Bethany College
Gardner, Allen Stiles (II) Md.
B.S. 1956, College of William and Mary
Garman, Ray Fillmore (I) D.C.
A.B. 1957, Johns Hopkins University
Gates, Francis Kenneth, Jr. (I) Calif.
A.B. 1956, Occidental College
Gates, Herbert Stelwyn, Jr. (IV) D.C.
A.B. 1954, Duke University
Gering, Henry Smither (I) Md.
B.S. 1957, The Citadel
Ghatan, Djamshid Jack (II) Iran
A.B. 1956, Susquehanna University
Gibbons, DeLamar Johnson (III) Utah
B.S. 1956, Utah State Agricultural College
Ginsburg, Martin Alan (III) Va.
A.B. 1955, Lehigh University
Giovannini, Andrew Manuel (I) Calif.
A.B. 1957, University of California
Glassman, Leonard Herbert (III) D.C.
B.S. 1955, Franklin and Marshall College
Glatch, Louis Frank, Jr. (II) Oreg.
A.B. 1956, Reed College
Gondos, Bernard (III) Va.
B.S. 1956, Yale University
Goodman, Julius Morton (II) Md.
Goodman, Philip (II) N.Y.
B.S. 1956, Union College
Goodsell, Neil Wylie (IV) Va.
A.B. 1955, The George Washington University
Graham, Ronald Milton (I) Wash.

Granger, Stephen Ireland (IV) Md.
A.B. 1952, Amherst College
Greene, Katherine Virginia (IV) Va.
A.B. 1947, Eastern Nazarene College
A.M. 1948, Ph.D. 1954, The George Washington University
Gresinger, Thomas Hamlin (I) Ohio
A.B. 1957, Williams College
Griffin, Charles Narey, Jr. (III) D.C.
Grigorian, Haikaz Martiros (III) Iran
A.B. 1952, Boston University
M.S. in P.H. 1953, Columbia University
Grundon, William Gene (II) D.C.
A.B. 1956, San Diego State College
Guiton, Carl Richard (I) N.J.
A.B. 1957, Columbia University
Gunther, Ronald Edgar (II) N.J.

H

Haddad, Barbara Jean (II) N.Y.
B.S. 1955, University of Miami
Haddad, John Khouri (III) N.Y.
A.B. 1953, Cornell University
M.S. 1955, University of North Carolina
Hagen, Harold Melton (II) Minn.
A.B. 1956, St. Olaf College
Hagley, Ray Russell (II) W.Va.
Hall, Lorne Franklyn (II) Conn.
A.B. 1956, Duke University
Hammel, Claire Louise (IV) Md.
Hampshire, Alan Curtis (III) R.I.
A.B. 1953, Amherst College
Hanson, Eric James (II) Md.
B.F.A. 1955, Pratt Institute
Harman, Lowell Kay (I) Ohio
A.B. 1957, Ohio State University
Hawkins, Forrest Glenn (II) W.Va.
A.B. 1956, West Virginia University
Henneberger, George Milton (IV) Md.
B.S. 1953, University of Maryland
Henrich, Leroy Michael (II) Va.
Herman, Monte Arnold (III) D.C.
A.B. 1956, The George Washington University
Hillery, Glenn Charles (III) Wis.
Hix, William Randolph (II) D.C.
Hixson, Clayton Allan (I) D.C.
B.S. 1957, Fairmont State College
Hogan, William Francis (I) Va.
Hogg, Charles Edgar (II) D.C.
Holt, Donald Edwin (III) Va.
A.B. 1954, University of California
Homayouni, Masud (IV) Iran
B.S. 1953, Michigan State Normal College
M.S. 1954, University of Michigan
Hubach, Fred Willis (IV) N.Y.
A.B. 1954, Western Maryland College
Huffman, Ray Thomas (I) Ohio
B.S. 1956, Bowling Green State University
Hung, Kin Lincoln (I) D.C.
B.S. 1957, University of Maryland
Hurlburt, Ward Bullard (III) D.C.
A.B. 1956, The George Washington University

I

Iben, Albert Bernhard (III) Va.
Iliescu, John, Jr. (IV) Ill.
B.S. 1952, D.D.S. 1954, University of Illinois

J

Jackson, Edward William (III) Calif.
Jackson, James Edwin (III) Ga.
B.S. 1950, Morehouse College
Jennings, John Howard (I) Mo.
A.B. 1957, Central College
Jinguji, Masaharu Gerald (II) Wash.
B.S. 1952, College of Puget Sound
Johnson, Bruce McCoy (I) Ohio
A.B. 1957, Carleton College
Johnson, Don Robert (III) Md.
A.B. 1955, Princeton University
Johnson, Jack Stoddard (II) Utah
Johnson, John Andrew, Jr. (IV) Pa.
B.S. 1954, Grove City College
Jones, John Paul, Jr. (IV) Minn.
A.B. 1954, Carleton College

K

Katz, Robert (I) Md.
Kaufman, Barry Melvyn (I) N.Y.
Kaufman, Richard Miles (IV) Md.
A.B. 1955, The George Washington University
Keefer, Frank Jay (I) W.Va.
A.B. 1957, Washington and Jefferson College
Keener, Carl Lee (I) Pa.
B.S. 1957, Eastern Mennonite College
Kelley, Severance Burrage (II) W.Va.
A.B. 1956, Ohio University
Kelly, John Edward (III) N.Y.
Kelly, Robert John (I) Mont.
A.B. 1952, University of Missouri
Kemp, James Furman (III) D.C.
A.B. 1955, University of Utah
Killen, Richard Beaman, Jr. (III) Fla.
A.B. 1955, Duke University
Kinder, Robert Samuel Lufbery (III) R.I.
A.B. 1951, Brown University
King, Anthony (III) Conn.
A.B. 1953, Williams College
Klaif, Charles Howard (IV) N.Y.
A.B. 1954, Syracuse University
Klatsky, Alan Usher (III) N.Y.
A.B. 1955, Yale University
Klinenberg, James Robert (III) Md.
A.B., A.M. 1955, Johns Hopkins University
Knapp, Lois Estelle (I) D.C.
B.S. 1957, Gustavus Adolphus College
Knorr, Norman John (I) Md.
Koeze, Thomas Henry (IV) Mich.
Konia, Charles (III) N.Y.
A.B. 1955, New York University
Kraut, Joseph William (II) Ill.
B.S.S. 1954, Georgetown University
Krebser, Werner (IV) Va.
Kuller, Lewis Henry (III) N.Y.
A.B. 1955, Hamilton College
Kunkle, Frank Albert (III) Ohio
Kyne, Peter John (III) D.C.
B.S. 1955, The George Washington University

L

Landaw, Stephen Arthur (III) N.J.
B.S. 1956, University of Wisconsin
Larive, Paul Keith (IV) S.D.
A.B. 1954, B.S. 1956, University of South Dakota

Larson, Paul Frank (III)	Md.
Latimer, Ronald Gordon (I)	Md.
Laudonio, Frank John (III)	N.Y.
A.B. 1955, Columbia University	
Lazaroff, Philip (III)	D.C.
Lefcourt, Arthur Murray (I)	N.Y.
Leonard, Thomas Plin (IV)	D.C.
Levine, Robert John (IV)	Va.
Levy, Steven Everett (IV)	Va.
A.B. 1955, The George Washington University	
Lind, John Arthur (IV)	Mass.
B.S. 1954, Bates College	
Linhart, Joseph Wayland (IV)	Va.
B.S. 1954, The George Washington University	
Liss, George (IV)	D.C.
A.B. 1955, The George Washington University	
Litton, Ralph J. (IV)	Idaho
B.S. 1954, University of Idaho	
London, Dan L. (II)	Utah
Long, Samuel Eugene (III)	N.Y.
Lowman, Joseph Allen (III)	Ala.
B.S. 1951, University of Alabama	
Lucas, George Lamoyne (I)	Ohio
A.B. 1957, Ohio University	

M

Maggio, Margaret Mary (II)	N.J.
Mainzer, Francis Kirkwood (III)	Pa.
A.B. 1952, Amherst College	
Majors, Robert Powell, Jr. (I)	N.C.
B.S. 1957, Davidson College	
Manolukas, Paul Angelo (II)	Va.
B.S. 1950, University of Pittsburgh	
M.B.A. 1955, University of Pennsylvania	
Marcus, Joel David (IV)	N.Y.
A.B. 1954, Columbia University	
Marlow, John (I)	Idaho
B.S. 1957, Brigham Young University	
Mason, James Kent (I)	Mont.
Mathis, Jacob Lenhardt, Jr. (I)	Calif.
A.B. 1957, University of California	
Mazella, Samuel Frank (I)	N.J.
A.B. 1957, Cornell University	
McAweeney, William Joseph (III)	Mass.
A.B. 1955, Providence College	
McCowin, Tius Walter (IV)	Idaho
B.S. 1949, Utah State Agricultural College	
McDonald, Duncan Keith (II)	D.C.
A.B. 1950, Williams College	
McGuire, Francis Donald (I)	N.J.
A.B. 1957, New York University	
McKay, Donald (I)	Mass.
A.B. 1955, Harvard University	
Mermel, John Frederick (II)	D.C.
B.S. 1956, Georgetown University	
Miceli, Anthony Matthew (III)	N.Y.
B.S. 1954, Wagner Memorial Lutheran College	
Mighell, Alan Donald (I)	Md.
B.S. 1957, The George Washington University	
Mileto, Dominica Anne (II)	Md.
A.B. 1956, Hood College	
Miller, George Francis (IV)	Va.
Miller, Jay Howard (I)	Md.
B.S. 1957, The George Washington University	
Mindel, Eugene David (II)	D.C.
B.S. 1956, University of Maryland	
Mitchell, George Hunt, Jr. (IV)	
B.S. 1954, Washington and Lee University	
Mize, William Raymond, Jr. (IV)	
A.B. 1954, Washington University	
Mondzac, Allen Mendel (I)	
Montgomery, Robert Bruce (III)	
B.S. 1955, University of Maryland	
Moore, James Reardon, Jr. (I)	
B.S. 1957, The George Washington University	
Morgan, Walter Albert (II)	D.
Morledge, Thomas Edison (I)	Mo
B.S. 1955, University of Arizona	
Mould, Thomas Mathew (III)	W
B.S. 1951, University of Wisconsin	
Mullins, Charles Edward (IV)	M
A.B. 1954, Princeton University	
Myers, Charles Hammett (II)	D.C
A.B. 1953, University of North Carolina	

N

Nachajski, Peter John (II)	Con
A.B. 1956, Brown University	
Nelson, Erven Jean (IV)	Ut
B.S. 1954, Brigham Young University	
Nemeth, Charles (I)	Hung
Nesbit, Mark Edwin (III)	Va.
B.S. 1955, University of Wisconsin	
Nutter, Donald Owen (I)	D.C.
A.B. 1957, Johns Hopkins University	

O

Obear, Margaret Fealy (IV)	Va.
A.B. 1955, The George Washington University	
Olsen, Earl Richard (II)	Va.
B.S. 1956, University of Wisconsin	
Olson, Hardin Elling (IV)	Va.
A.B. 1955, The George Washington University	
Olson, Harding William (III)	N.Y.
B.S. 1951, Kent State University	
Ong, Beale Hibbs (III)	Md.
A.B. 1955, The George Washington University	
O'Reilly, Richard Rolin (II)	Pa.
B.S. 1957, University of Pittsburgh	
Ottenberg, Ronald (III)	D.C.
A.B. 1956, The George Washington University	

P

Pabon-Gomez, Pedro Mario (III)	Puerto Rico
A.B. 1955, Polytechnic Institute of Puerto Rico	
Parker, Caddie Lewis (IV)	D.C.
B.S. 1954, University of Utah	
Parker, Jerry Michael (II)	Pa.
B.S. 1957, University of Pittsburgh	
Payne, Robert Marr (III)	Va.
B.S. 1955, Brigham Young University	
Perez-Gonzalez, Manuel (III)	N.Y.
B.C.E. 1944, College of the City of New York	
Perrine, Diane Patricia (III)	Calif.
A.B. 1955, San Francisco State College	
Peterson, Kent Albrecht (III)	Md.
A.B. 1956, The George Washington University	
Pinkerton, John Douglas (II)	Mich.

Piper, Jurgen Francis (III) Md.
Pistone, Joseph Vincent (III) Va.
B.S. 1954, The George Washington University
Plenderleith, Ian (IV) Mich.
B.S. 1951, Michigan State University of Agriculture and Applied Science
Pogue, William Lloyd (III) Md.
A.B. 1955, Williams College
Pollock, Joseph Jordan (IV) D.C.
B.S. 1954, Grove City College
Ponack, Bette (II) D.C.
B.S. 1956, Tufts University
Porton, Fredric Carl (III) D.C.
A.B. 1956, The George Washington University
Potter, Marvin John (IV) Calif.
A.B. 1954, Stanford University
Powell, William Alfred (III) D.C.
A.B. 1953, Ohio Wesleyan University
A.M. 1955, Williams College
Pressman, David Louis (I) Mass.
A.B. 1957, Harvard University
Pulicicchio, Louis Umile (IV) N.Y.
A.B. 1954, Columbia University
Purcell, Theodore Robert (III) Calif.
A.B. 1950, B.S. 1953, University of California
Putnam, Willard Samuel, Jr. (II) Mass.
A.B. 1944, Harvard University

R

Rademacher, Raymond Julius (IV) Mont.
A.B. 1952, Montana State University
Radlauer, Charles Burton (I) N.Y.
Ramirez, Fernando Enrique (I) Puerto Rico
Rasband, James Edwin (IV) Wash.
A.B. 1953, Brigham Young University
Ratzer, Erick Robert (IV) Ill.
Ray, Catherine Tissot (IV) Md.
A.B. 1954, Swarthmore College
Reed, Robert Hammond (IV) Colo.
B.S. 1954, The George Washington University
Rehmeyer, Richard Curtis (I) Pa.
A.B. 1957, Haverford College
Reis, Robert Leonard (IV) N.J.
Renner, John Howard (IV) Va.
A.B. 1954, Dartmouth College
Richey, Drake (III) W.Va.
A.B. 1955, West Virginia University
Riddell, Richard Ross (I) Calif.
A.B. 1957, University of Southern California
Robb, David Nelson (IV) Calif.
Ph.B. 1948, University of Chicago
Robinson, Rulon Douglas Idaho
B.S. 1955, Brigham Young University
Roll, William Emanuel, Jr. (II) Md.
Roman, Manuel (IV) N.Y.
A.B. 1954, New York University
Rosenberg, Robert Daniel (I) N.Y.
Rowe, Lynn Brockbank (I) Utah
Rozan, Stephen Warren (II) N.Y.
A.B. 1957, Bethany College
Rugani, Peter Robert (III) D.C.
A.B. 1951, New York University
A.M. 1955, Columbia University

S

Sawyer, Norman Marshall (II) D.C.
B.S. 1949, U. S. Coast Guard Academy
Schafer, David Lloyd (II) Minn.
Schatten, Ivan Charles (IV) Pa.
B.S. 1950, University of Pittsburgh
Scherer, Edward Underwood (III) Pa.
B.S. 1955, Haverford College
Schiffman, Elliott (II) Conn.
B.S. 1957, Yale University
Schlossberg, Mary Coleman (II) D.C.
A.B. 1949, University of Chicago
A.M. 1957, Johns Hopkins University
Schneider, Gerald Arthur (II) N.Y.
B.S. 1956, College of William and Mary
Schoefer, Gilbert Roland (III) Calif.
A.B. 1955, Stanford University
Schull, Robert Scott (I) N.Y.
A.B. 1957, Tulane University
Seck, Gordon Eugene (III) Calif.
B.S. 1953, University of California
Secrist, Wilbur Lowell (I) W.Va.
A.B. 1957, West Virginia University
Seeley, James Albert (II) Idaho
Seftel, Leroy Allen (III) N.J.
B.S. 1955, Rutgers University
Senior, Robert Morris (I) N.Y.
A.B. 1957, Oberlin College
Shapiro, Joan Adele (III) D.C.
B.S. 1955, Rutgers University
Shaw, Seth Thomas, Jr. (II) Va.
Sheer, Leon Gilbert (I) Md.
Sheffield, William Hart (I) Calif.
A.B. 1957, Yale University
Sheinis, Arnold (II) D.C.
B.S.S. 1948, College of the City of New York
Shook, Marcus Boyd (III) D.C.
Shreve, Daniel Trundle (II) Md.
Sigalos, George Louis (III) N.Y.
A.B. 1955, Lafayette College
Silberman, William Charles (I) Md.
Silva, Carlos Alberto (II) D.C.
B.S. 1956, University of Puerto Rico
Simons, George Washington (II) Md.
Skaff, Robert Habeeb (IV) D.C.
A.B. 1955, West Virginia University
Skeen, William Waldo (II) N.C.
A.B. 1955, University of North Carolina
Slette, Darrell Roger (IV) Wis.
B.S. 1954, University of Wisconsin
Smith, David Forsythe (IV) Calif.
Smith, John Joseph (III) D.C.
A.B. 1955, Seton Hall University
Snell, George Francis (IV) Conn.
Snook, William Henry (II) Va.
B.S. in Phar. 1952, State University of Iowa
Sobhani, Hossein Chaharbashi (II) Iran
B.S. 1957, University of Oklahoma
Solack, George Andrew (II) Pa.
Solomon, Barbara Ann (II) Calif.
A.B. 1953, A.M. 1954, University of California
Speidell, Edmund Allan (III) N.J.
A.B. 1955, Williams College
Stansberry, Richard Donald (IV) D.C.
A.B. 1950, Oklahoma City University
Stein, Ira David (II) N.J.
B.S. 1956, Rutgers University
Stern, Jere Bart (IV) D.C.
B.S. 1954, The George Washington University
Stevenson, Eugene Octave Sykes (II) D.C.
B.S. 1955, The George Washington University

Stewart, Dale Duane (II) Calif.
A.B. 1956, Johns Hopkins University
Stubbs, Peggy Ann (I) Va.
Sullivan, Robert Claude (IV) Md.
A.B. 1954, Williams College
Sylvester, Wendell Reginald (IV) Md.
A.B. 1951, Columbia University

T

Tang, Tze-Tung (IV) China
A.B. 1944, National Central University, China
B.S. 1949, St. Mary's College
M.S. 1951, Ph.D. 1954, The George Washington University
Tate, Harry Randolph (I) N.J.
A.B. 1957, University of Virginia
Taylor, Eugene Field (III) Calif.
Teimourian, Bahman (IV) Iran
B.S. 1955, Bethany College
Tenney, Richard L. (I) N.J.
A.B. 1957, Duke University
Thompson, William Frederick (I) Md.
B.S. 1957, The George Washington University
Thornton, Valery (I) D.C.
Tomlinson, Fred Brownell (IV) Ga.
A.B. 1955, The George Washington University
Tompson, Robert Vaughn (IV) Mo.
Towles, William Julian (IV) Calif.
A.B. 1954, Occidental College
Troshinsky, Charles Hilary (IV) D.C.
A.B. 1954, The George Washington University
Tucker, Donald Julius (I) N.Y.
A.B. 1957, Cornell University
Tyerman, Peter A. (I) Calif.
A.B. 1957, University of Oregon
Tyler, George Scott (IV) Calif.
A.B. 1954, University of California at Los Angeles

U

Urbanski, Frank Xavier (I) N.J.
B.S. 1957, Dickinson College

V

Van Every, David Berl (III) Va.
A.B. 1955, University of California at Los Angeles
Van Fleet, William Vernon (I) D.C.
A.B. 1957, The George Washington University
Vu, Hau Ngoc (I) Thailan

W

Wadleigh, John Russell (III) D.C.
A.B. 1957, The George Washington University
Waldman, Morton (IV) D.C.
A.B. 1954, Lafayette College
Walkoff, Charles Stanley (III) Conn.
Wallman, Arthur Andrew (I) N.Y.
B.S. 1957, Queens College
Wang, Chung Chiang (IV) D.C.
B.S. 1952, Iowa State College
Warren, William Stuart (II) Del.
A.B. 1956, Dartmouth College
Watson, Harold Kirk (II) Conn.
B.S. 1956, Bates College
Westfall, Florent Franklin (I) Md.
White, Daniel Britton (I) Mich.
A.B. 1957, Dartmouth College
Wildemann, Mark Frederick (II) W.Va.
B.S. 1956, University of Maryland
Williams, Melvin Clayton (III) Pa.
Williams, Wilfred LeRoy (III) Calif.
B.S. 1955, Whitworth College
Wilson, Harry Edward, Jr. (IV) Pa.
B.S. 1954, Grove City College
Wood, Warren Arthur, Jr. (I) Mich.
B.S. 1957, Hillsdale College
Woy, Theodore Charles (IV) Calif.

Y

Yeaman, Max Wilfred (II) D.C.
A.B. 1954, University of California
Yee, Jason Faht-Gong (IV) Calif.
Yen, Paul Ming-Hsung (III) Formosa
B.S. 1955, University of Redlands
Young, Ira Sanders (III) N.Y.
A.B. 1955, Lafayette College
Yuppa, Carmen Giovanni (III) Calif.
Yutzy, Carl Vernon (II) Pa.

Z

Zelles, Gary Warren (I) N.J.
A.B. 1957, Rutgers University
Zumoff, Bertram (II) D.C.

SUMMARIES OF REGISTRATION

1957–58

NUMBER OF REGISTRANTS

Class entering September 1957	102
Class entering September 1956	100
Class entering September 1955	89
Class entering September 1954	91
Total	382

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

Alabama	1	New Jersey	20
Arizona	1	New York	36
California	34	North Carolina	2
Colorado	1	North Dakota	1
Connecticut	9	Ohio	7
Delaware	1	Oregon	2
District of Columbia	55	Pennsylvania	19
Florida	1	Rhode Island	2
Georgia	2	South Dakota	1
Idaho	7	Utah	9
Illinois	5	Virginia	27
Indiana	1	Washington	5
Kansas	1	West Virginia	9
Maine	1	Wisconsin	8
Maryland	36	China	1
Massachusetts	7	Formosa	1
Michigan	4	Hungary	1
Minnesota	4	Iran	5
Missouri	4	Puerto Rico	2
Montana	4	Thailand	1

GRADUATES OF COLLEGES REGISTERED IN THE SCHOOL OF MEDICINE

Alabama, University of	1	Carleton College	5
Amherst College	3	Catholic University of America	2
Arizona, University of	2	Central College	1
Bates College	2	Chicago, University of	1
Bethany College	3	Citadel, The	1
Boston University	1	Colgate University	1
Bowling Green State University	1	Columbia University	7
Bridgeport, University of	1	Cornell University	5
Brigham Young University	5	Dartmouth College	3
Brown University	2	Davidson College	1
Buffalo, University of	1	Dickinson College	1
California, University of	11	Drake University	1
California, University of, at Los Angeles	5	Duke University	8
		Duquesne University	1

Eastern Mennonite College	1
Eastern Nazarene College	1
Fairmont State College	1
Franklin and Marshall College	3
George Washington University, The	36
Georgetown University	3
Grove City College	3
Gustavus Adolphus College	1
Hamilton College	1
Harvard University	5
Haverford College	4
Hillsdale College	1
Hood College	1
Idaho, University of	2
Illinois, University of	1
Iowa State College	1
Iowa, State University of	2
Johns Hopkins University	6
Kansas, University of	1
Kent State University	1
Lafayette College	4
Lehigh University	1
Maine, University of	1
Maryland, University of	6
Massachusetts College of Pharmacy	1
Miami, University of	1
Michigan State Normal College	1
Michigan State University of Agriculture and Applied Science	1
Michigan, University of	1
Missouri, University of	2
Montana State University	1
Morehouse College	1
National Central University, China	1
New York, College of the City of	2
New York University	5
North Carolina, University of	3
Northwestern University	1
Oberlin College	1
Occidental College	4
Ohio State University	2
Ohio University	2
Ohio Wesleyan University	1
Oklahoma City University	1
Oklahoma, University of	1
Oregon, University of	1
Pennsylvania, University of	1
Pittsburgh, University of	5
Pratt Institute	1
Princeton University	
Providence College	
Puerto Rico, Polytechnic Institute of	
Puerto Rico, University of	
Puget Sound, College of	
Queens College	
Redlands, University of	
Reed College	
Ripon College	
Rutgers University	
St. John's University	
St. Mary's College	
St. Olaf College	
San Diego State College	
San Francisco State College	
Seton Hall University	
South Dakota, University of	
Southern California, University of	
Stanford University	
Susquehana University	
Swarthmore College	
Syracuse University	
Taylor University	
Tufts College	
Tulane University	
Union College	
U. S. Coast Guard Academy	
Utah State Agricultural College	
Utah, University of	
Vassar College	
Virginia, University of	
Wagner Memorial Lutheran College	
Washington and Jefferson College	
Washington and Lee University	
Washington University	
Washington, University of	
Wesleyan University	
Western Maryland College	
Western Reserve University	
Westminster College	
West Virginia University	
Whitworth College	
William and Mary, College of	
Williams College	
Wisconsin, University of	
Yale University	
Number of College Graduates	281
Number of Colleges Represented	121

INDEX

INDEX

A

Academic status, 5–6
Administration, Officers of, 4
Administrative Assistants, 42
Admission, 52
  Application for, 52
  Requirements for, 52–53
  Selection procedure, 53
Advanced standing, 53
Anatomy, courses in, 64–65
Anesthesiology, courses in, 66–67
Arts and Medicine, combined curriculum, 58
Assistants in Research and Instruction, 37–41
Attendance, 57
Awards, 54–56

B

Bachelor of Arts, degree of, 58
Bacteriology, courses in, 68–70
Biochemistry, courses in, 71–72

C

Calendar of the School, vi
Cancer Clinic, 51
Clinical facilities, 51–52
Colleges from which students hold degrees, 115
Committees of the Faculty, 44–45
Cost of textbooks and equipment, 54
Courses of Instruction, 63–104
  Numbers and symbols used in connection with, 63
Curriculum, 48–49

D

Degrees conferred in 1957, 107
Departments of Instruction, 65–104
Dermatology, courses in, 73
Doctor of Medicine, degree of, 58–59

E

meritus Professors, 9
ntrance requirements, 52–53
quipment and facilities, 50–51
xaminations, 57–58

F

Faculty 1957–58, 43–44
Fees and financial regulations, 53–54
Fellowships, 54–55

G

Geographical distribution of students, 115
Government museums, 50–51
Grades, 57
Graduation:
  Application for, 58
  Presence at, 58
Gynecology, courses in, 82–84

H

Health Administration, 60–61
History of the School, 45
History of the University, 5
Honor societies, 62
Honors, 59
Hospital, 50
Hygiene, courses in, 68–70

I

Internship, 57
Intern training, 59

L

Laboratories, 50
Library, 50
Living accommodations, 61
Loan funds, 56–57
Location of the University, 6

M

Medical Admission Test, 53
Medical School Building, 50
Medical Technologist Course, 60
Medicine, courses in, 74–79

N

Neurology and Neurological Surgery, courses in, 80–81

O

Objectives of the School of Medicine, 46
Obstetrics, courses in, 82–84
Ophthalmology, courses in, 85

Orientation program, 46
Otolaryngology, courses in, 86
Outpatient Department, 51

P

Pathology, courses in, 87–89
Pediatrics, courses in, 90–92
Pharmacology, courses in, 93–94
Physical examinations, 61
Physical Medicine, courses in, 95
Physiology, courses in, 96–97
Plan of instruction, 46–47
Preventive Medicine, courses in, 68–70
Prizes, 56
Psychiatry, courses in, 98–99

R

Radiology, courses in, 100
Recreation, 62
Registration, 53
  Summaries of, 115
Regulations, 57–58
Rehabilitation, courses in, 95
Research, assistants in, 37–41
Research Building, 50
Resident training, 59
Right to change rules, 62
Right to dismiss students, 58

S

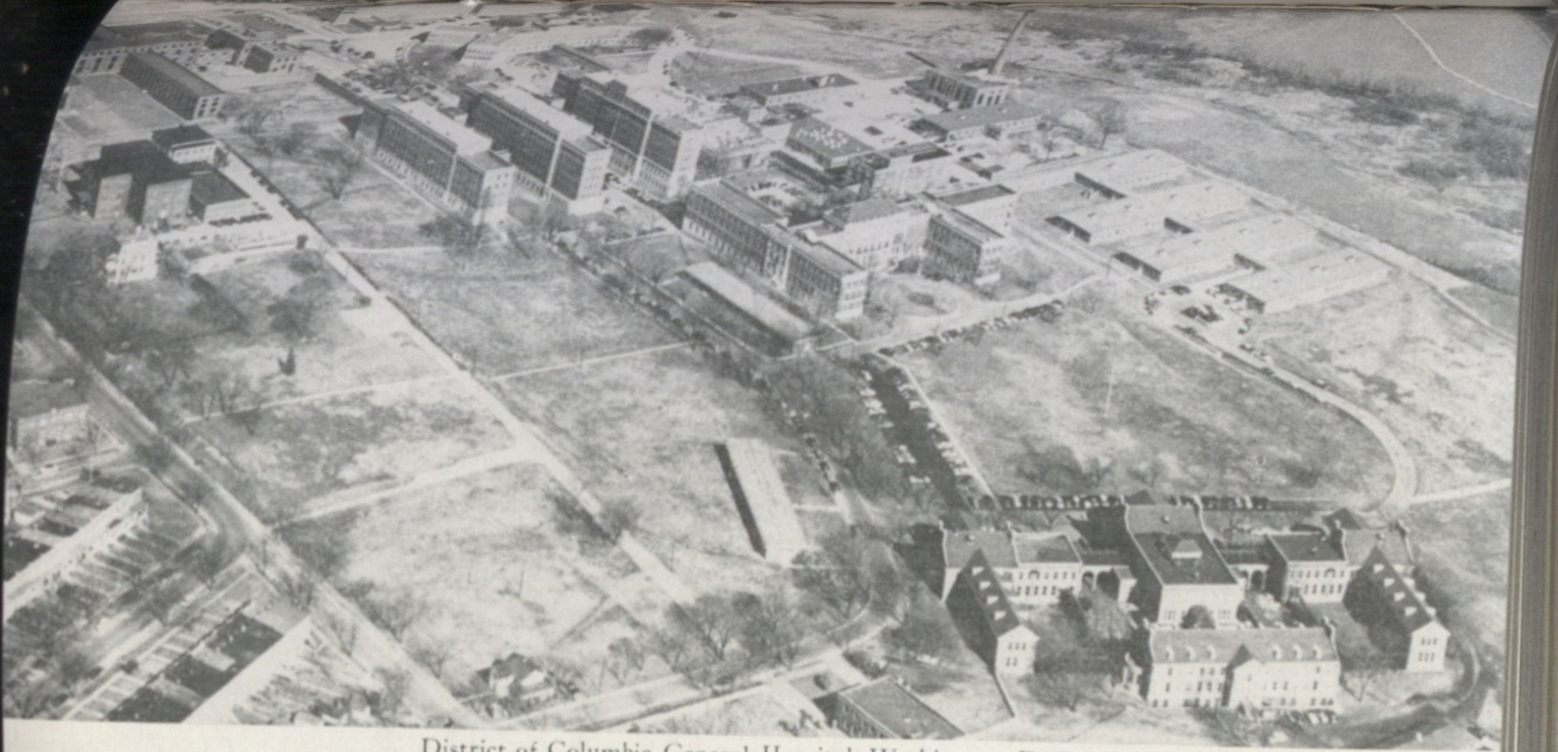
Scholarships, 55–56
Staff of Instruction, 1957–58, 9–37
Standing of the School, 6
Student equipment, cost of, 54
Students registered, 1957–58, 109
Surgery, courses in, 101–3
Syphilology, courses in, 73

T

Technical assistants, 42
Textbooks, cost of, 54
Trustees, Board of, 3

U

University:
  Academic status, 5–6
  Colleges, schools, divisions, 5
  History, 5
  Location, 6
Urology, courses in, 104



District of Columbia General Hospital, Washington, D. C.

The George Washington University Hospital—Clinic Entrance

THE LAW SCHOOL

1958-59

THE GEORGE WASHINGTON UNIVERSITY BULLETIN

VOL. LVII

No. 2

THE LAW SCHOOL

WASHINGTON 6, D. C.
PUBLISHED IN NOVEMBER
MCMLVII
BY THE UNIVERSITY

CONTENTS

CALENDAR OF THE LAW SCHOOL vi

THE UNIVERSITY 1

- The Board of Trustees 3
- Officers of Administration 4
- History and Organization, Academic Status, Location 5

THE LAW SCHOOL 7

- The Faculty and Staff of Instruction 9
- General Information 14
- Admission 18
- Registration 20
- Fees and Financial Regulations 21
- Fellowships, Scholarships, Prizes, Loan Funds 22
- Regulations 24
- Student Life 27
- The Degrees of Bachelor of Laws and Juris Doctor 29
- Graduate Program 32

COURSES OF INSTRUCTION 37

DEGREES CONFERRED, FEBRUARY, JUNE, AND OCTOBER, 1957 51

STUDENTS REGISTERED, SPRING, SUMMER, AND FALL, 1957 57

SUMMARIES OF REGISTRATION, SPRING 1956-57, SUMMER 1957, FALL 1957-58 83

INDEX 89

CALENDAR

1958–59

Date	Day	Occasion
1958		
SUMMER TERM:		
June 6	Friday	Registration for both sessio
June 9	Monday	First session begins
July 4	Friday	Independence Day. Holiday
July 18	Friday	Last day of classes
July 19–22	Saturday through Tuesday	First session examination peri
July 23	Wednesday	Registration for students atten ing second session only
July 24	Thursday	Second session begins
Sept. 1	Monday	Labor Day. Holiday
Sept. 3	Wednesday	Last day of classes
Sept. 4–6	Thursday through Saturday	Second session examination period
FALL SEMESTER:		
Sept. 18 and 19 ..	Thursday and Friday.	Registration
Sept. 22	Monday	Fall semester begins
Oct. 18	Saturday	Fall Convocation
Nov. 11	Tuesday	Veterans Day. Holiday
Nov. 27–29	Thursday through Saturday	Thanksgiving recess
Dec. 22–Jan. 3 ...	Monday through Saturday	Christmas recess
1959		
Jan. 5	Monday	Classes resume Last day for receiving dissertations of candidates for the degree of Doctor of Juridical Science to be conferred in June
Jan. 19–27	Monday through Tuesday	Examination period
SPRING SEMESTER:		
Jan. 29 and 30 ...	Thursday and Friday.	Registration
Feb. 2	Monday	Spring semester begins
Feb. 23	Monday	Winter Convocation. Holiday
March 27–April 1..	Friday through Wednesday	Easter recess
May 18–26	Monday through Tuesday	Spring semester examination period
May 31	Sunday	Baccalaureate Sermon
June 3	Wednesday	Commencement

THE UNIVERSITY

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Pauline Bogsch, *Secretary to the Dean of the Law School*
Marjorie Groh Aierstock, *Secretary in the Law School*
Jonie Tom, *Secretary in the Law School*

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* For the academic year 1957–58.
† On leave of absence fall semester 1957–58.

THE UNIVERSITY

History and Organization

The idea of a university in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

The George Washington University operates under a charter granted by an act of Congress of February 9, 1821, to Columbian College in the District of Columbia. In 1873 the name was changed to "Columbian University" and in 1904 to "The George Washington University".

The University as it is now organized consists of the Junior College, comprising the work of the freshman and sophomore years; Columbian College, the senior college of liberal arts, which offers work leading to the Bachelor's and Master's degrees; the Graduate Council, which offers work leading to the degree of Doctor of Philosophy; the professional schools, which include Medicine, Law, Engineering, Pharmacy, Education, and Government; the College of General Studies; the Division of University Students; the Division of Special Students; the Division of Air Science; and the Summer Sessions.

Academic Status

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association.

LOCATION

The George Washington University is in downtown Washington, four blocks west of the White House and east of the Potomac River with its extensive parkway. Within a few blocks are the buildings housing the offices of many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor. Also readily accessible are the Capitol, the Library of Congress, the National Archives, the Supreme Court, and other federal courts.

THE LAW SCHOOL

THE LAW SCHOOL

THE FACULTY AND STAFF OF INSTRUCTION[*]

CLOYD HECK MARVIN, Ph.D., LL.D., *President of the University*
OSWALD SYMISTER COLCLOUGH, B.S., LL.B., LL.D., *Dean of Faculties*
————————, *Dean of the Law School*
CARVILLE DICKINSON BENSON, A.B., LL.B., S.J.D., *Assistant Dean of the Law School*
LOUIS HARKEY MAYO, B.S., LL.B., J.S.D., *Assistant Dean of the Law School*
LEROY SORENSON MERRIFIELD, A.B., LL.B., M.P.A., S.J.D., *Director of Continuing Legal Education*

EMERITUS FACULTY

CHARLES SAGER COLLIER
Professor Emeritus of Law in Residence
A.B. 1911, LL.B. 1915, S.J.D. 1932, Harvard University.

GEORGE BOWDOIN CRAIGHILL
Professor Emeritus of Law
A.B. 1903, University of the South; LL.B. 1906, Georgetown University.

GILBERT LEWIS HALL
Professor Emeritus of Law
A.B. 1899, Swarthmore College; LL.B. 1918, The George Washington University.

JOHN WILMER LATIMER
Professor Emeritus of Law
LL.B. 1897, The George Washington University.

BOLITHA JAMES LAWS
Professor Emeritus of Law
LL.B. 1913, LL.M. 1914, LL.D. 1950, Georgetown University.

WALTER LEWIS MOLL
Professor Emeritus of Law
A.B. 1898, Concordia College (Ind.); Graduate 1899, Concordia Theological Seminary (St. Louis); LL.B. 1923, Indiana University; S.J.D. 1924, Harvard University.

JAMES WARD MORRIS
Professor Emeritus of Law
A.B. 1912, University of North Carolina.

ALVIN LeROY NEWMYER
Professor Emeritus of Law
LL.B. 1906, The George Washington University.

HECTOR GALLOWAY SPAULDING
Professor Emeritus of Law
B.S. 1900, University of Minnesota; LL.B. 1903, S.J.D. 1924, Harvard University.

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[*] The President of the University, the Dean of Faculties, the Dean and Assistant Deans of the School, the Registrar of the University, the Director of Admissions of the University, Professors, Adjunct Professors, Associate Professors, and Assistant Professors constitute the Faculty. Faculty and Staff of Instruction for the academic year 1957–58.

ACTIVE FACULTY

CARVILLE DICKINSON BENSON
Professor of Law; Assistant Dean of the Law School
A.B. 1920, Johns Hopkins University; LL.B. 1923, S.J.D. 1926, Harvard University.

THOMAS HAYWARD BROWN
Lecturer in Law
Member of the bar of the District of Columbia.

OSWALD SYMISTER COLCLOUGH
Professor of Law; Dean of Faculties
B.S. 1920, United States Naval Academy; LL.B. 1935, The George Washington University; LL.D. 1946, Muhlenberg College.

ROBERT McKINNEY COOPER
Associate Professor of Law
Ph.M. 1931, University of Wisconsin; J.D. 1934, University of Michigan.

JOHN JOSEPH CZYZAK
Professorial Lecturer in Law
A.M. 1939, John Carroll University; LL.B. 1942, Western Reserve University.

*JOSEPH DACH
Professorial Lecturer in Law
LL.D. 1929, University of Budapest; LL.B. 1945, The George Washington University.

CARL CLELL DAVIS
Lecturer in Law
B.S. 1942, Oklahoma Agricultural and Mechanical College; LL.B. 1949, University of Oklahoma; LL.M. 1953, The George Washington University.

JAMES FORRESTER DAVISON
Professor of Law
A.B. 1921, LL.B. 1923, Dalhousie University; LL.M. 1924, S.J.D. 1929, Harvard University.

ROBERT GALLOWAY DIXON, JR.
Associate Professor of Law
A.B. 1943, Ph.D. 1947, Syracuse University; LL.B. 1956, The George Washington University.

JUSTIN LINCOLN EDGERTON
Professorial Lecturer in Law
A.B. 1929, LL.B. 1931, The George Washington University.

PASQUALE JOSEPH FEDERICO
Lecturer in Law
B.S. 1923, Case Institute of Technology; A.M. 1925, The George Washington University; LL.B. 1932, Washington College of Law.

JOHN THEODORE FEY
Professorial Lecturer in Law
LL.B. 1940, University of Maryland; M.B.A. 1942, Harvard University; J.S.D. 1952, Yale University.

KITTY BLAIR FRANK
Special Lecturer in Law
A.B. 1943, University of Wisconsin; J.D. 1950, The George Washington University.

†WILLIAM THOMAS FRYER
Professor of Law
A.B. 1922, LL.B. 1924, The George Washington University; J.D. 1925, Yale University.

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* On leave of absence 1957–58.
† On sabbatical leave fall semester 1957–58.

CROMBIE JAMES DICKINSON GARRETT
Lecturer in Law
A.B. 1940, Amherst College; LL.B. 1946, Yale University.

GEORGE JOSEPH GOLDSBOROUGH
Lecturer in Law
B.S. 1947, U. S. Military Academy; J.D. 1950, The George Washington University.

WILLIAM WOOLCOTT GOODRICH
Lecturer in Law
LL.B. 1938, University of Texas.

JACKSON REID HAMBRICK
Associate Professor of Law
A.B. 1938, Wofford College; LL.B. 1942, Duke University.

ALFRED HANTMAN
Special Lecturer in Law
A.B. 1939, Brooklyn College; LL.B. 1948, The George Washington University.

LOUIS JAMES HARRIS
Professorial Lecturer in Law
A.B. 1932, Cornell University; LL.B. 1939, S.J.D. 1942, Brooklyn Law School; LL.M. 1948, The George Washington University.

PHILIP FIELD HERRICK
Professorial Lecturer in Law
A.B. 1929, Williams College; LL.B. 1933, LL.M. 1936, The George Washington University.

JOHN WINGFIELD JACKSON
Adjunct Professor of Law
B.S. 1928, University of Pennsylvania; LL.B. 1932, The George Washington University.

JOHN ALEXANDER KENDRICK
Clerk of the Trial Practice Court
A.B. 1942, LL.B. 1943, The George Washington University.

JAMES ROBERT KIRKLAND
Adjunct Professor of Law
A.B. 1927, LL.B. 1928, LL.M. 1929, The George Washington University; LL.D. 1930, Southeastern University; Judge, United States District Court for the District of Columbia.

VINCENT KLEINFELD
Lecturer in Law
LL.B. 1929, Columbia University.

ABE KRASH
Lecturer in Law
A.B. 1946, J.D. 1949, University of Chicago.

MILTON PAUL KROLL
Lecturer in Law
A.B. 1934, West Virginia University; LL.B. 1937, Harvard University.

GUST ANGELO LEDAKIS
Assistant Professor of Law
B.B.A. 1953, LL.B. 1955, University of Washington.

SAMUEL JOSEPH L'HOMMEDIEU, Jr.
Lecturer in Law
B.S. 1949, University of Maryland; LL.B. 1951, LL.M. 1952, The George Washington University

HERBERT JOSEPH LIEBESNY
Lecturer in Law
J.D. 1935, University of Vienna.

*WILLIAM THOMAS MALLISON, Jr.
Associate Professor of Law
A.B. 1940, University of Washington; LL.B. 1948, Vanderbilt University.

LOUIS HARKEY MAYO
Associate Professor of Law; Assistant Dean of the Law School
B.S. 1940, United States Naval Academy; LL.B. 1949, University of Virginia; J.S.D. 1953, Yale University.

JOHN ALBERT McINTIRE
Professorial Lecturer in Law
A.B. 1928, LL.D. 1954, Wittenberg College; LL.B. 1931, University of Cincinnati.

LEROY SORENSON MERRIFIELD
Professor of Law; Director of Continuing Legal Education
A.B. 1938, LL.B. 1941, University of Minnesota; M.P.A. 1942, S.J.D. 1956, Harvard University.

GEORGE EDWARD MONK
Professorial Lecturer in Law
A.B. 1928, LL.B. 1930, LL.M. 1934, The George Washington University.

JAMES OLIVER MURDOCK
Professor of Law
Ph.B. 1916, University of Chicago; LL.B. 1924, Harvard University.

FRANK HAMMETT MYERS
Adjunct Professor of Law
LL.B. 1923, LL.M. 1924, The George Washington University; Judge, Municipal Court for the District of Columbia.

HERMAN ISRAEL ORENTLICHER
Professor of Law
A.B. 1933, LL.B. 1936, Harvard University.

GEORGE NELSON ROBILLARD
Lecturer in Law
B.S. 1924, United States Naval Academy; LL.B. 1930, St. John's University.

PAUL ARCHIBALD ROSE
Lecturer in Law
LL.B. 1930, Washington College of Law.

DUDLEY GRAHAM SKINKER
Associate Clerk of the Trial Practice Court
LL.B. 1940, The George Washington University.

ALEXANDER LOUIS STEVAS
Special Lecturer in Law
LL.B. 1951, The George Washington University.

ORVILLE HASSLER WALBURN
Professor of Law
A.B. 1925, Franklin and Marshall College; LL.B. 1930, University of Pennsylvania; J.D. 1932, Georgetown University.

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* On leave of absence fall semester 1957–58.

LEONARD PATRICK WALSH
Professorial Lecturer in Law
A.B. 1927, University of Minnesota; LL.B. 1933, National University; Chief Judge, Municipal Court for the District of Columbia.

*DAVID BENSON WEAVER
Associate Professor of Law
A.B. 1943, Ohio Wesleyan University; LL.B. 1948, Western Reserve University.

GLEN EARL WESTON
Associate Professor of Law; Editor in Chief of the Law Review
B.S. 1943, University of Maryland; LL.B. 1948, The George Washington University.

RAYMOND WARREN YOUNG
Assistant Professor of Law
A.B. 1945, New Jersey State Teachers College; A.M. 1946, Rutgers University; Ph.D. 1949, Johns Hopkins University; J.D. 1957, The George Washington University.

CHARLES JAMES ZINN
Professorial Lecturer in Law
A.B. 1927, LL.B. 1930, Fordham University; LL.M. 1951, S.J.D. 1954, Georgetown University.

COMMITTEES†

The Dean's Council

William Thomas Fryer
James Forrester Davison
Leroy Sorenson Merrifield
Carville Dickinson Benson
James Oliver Murdock
Herman Israel Orentlicher
Robert McKinney Cooper

Committee on Admissions

Carville Dickinson Benson, *Chairman*
Louis Harkey Mayo
Edward Andrew Potts, *Ex officio*

Committee on Graduate Studies

James Forrester Davison, *Chairman*
James Oliver Murdock
Robert McKinney Cooper
Leroy Sorenson Merrifield
Louis Harkey Mayo

Committee on Scholarship

Orville Hassler Walburn, *Chairman*
Carville Dickinson Benson
Louis Harkey Mayo
Edward Andrew Potts, *Ex Officio*

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* On sabbatical leave 1957–58.

† The Dean of Faculties and the Dean and Assistant Deans of the Law School are members ex officio of all committees.

Committee on Curriculum

Herman Israel Orentlicher, *Chairman*
William Thomas Fryer — James Forrester Davison
Robert McKinney Cooper — Louis Harkey Mayo

Library Committee

Robert Galloway Dixon, Jr., *Chairman*
Jackson Reid Hambrick — Gust Angelo Ledakis
Raymond Warren Young

GENERAL INFORMATION

Location in the Nation's Capital

The George Washington University Law School, now in its 93d year, is the oldest law school in the District of Columbia. The School took part as a charter member in 1900 in the organization of the Association of American Law Schools and it has been an active member of the Association since that time. It is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association.

National University, which has had an important place in legal education in the District of Columbia since 1869, was merged into The George Washington University in August 1954.

Of special significance is the location of the Law School in the Nation's Capital, the focal point of the law in action, both American and international. The work of the School goes on in this environment, presenting a unique opportunity for observation and study of federal agencies—judicial, legislative, and administrative. Readily accessible are the Supreme Court of the United States, the federal trial and appellate courts of the District of Columbia, and, in addition, federal courts of special jurisdiction, such as the United States Court of Claims, the United States Court of Customs and Patent Appeals, and the Tax Court of the United States. Current federal legislation can be studied as it is considered by Congressional committees and as it comes up for debate on the floors of the House of Representatives and the Senate. It is with respect to the federal administrative agencies that the students here in Washington have matchless opportunities for study and observation. They can attend informal and formal hearings of these agencies and can obtain from the docket sections complete records of administrative adjudication in specific cases. Illustrative of such federal agencies are the Interstate Commerce Commission and the Civil Aeronautics Board in the field of transportation; the Federal Trade Commission in the field of trade regulation; the Securities and Exchange Commission in the field of security issues and corporate finance; the National Labor Relations Board in the field of labor-management relations; the United States Patent Office in the field of patent law; the Federal Power Commission in the field of water, natural gas, and electric power; and the Federal Communications Commission in the field of radio and television.

Supplementing these environmental advantages of law in action are the exceptional research library collections in the Library of Congress, in the various departments of the Federal Government, and in the libraries of the headquarters of national and international organizations located in Washington. The notable library of the Carnegie Foundation for International Peace has been acquired by The George Washington University for use of research students in international and comparative law, fields with respect to which Washington has come to be called "The Capital of the World".

The years of residence at law school are years of participation in the life of the community, which in the case of the George Washington University Law School, is the government of the United States by law. As a consequence, the study of law takes on added meaning, whether the goal be government service or practice, general or specialized.

OBJECTIVES

The primary purpose of the Law School is to prepare men and women to meet the needs of society in the many fields of law, public and private. These needs call not only for technical skill but also for responsible leadership in the development of the law and the administration of justice. In fulfilling these responsibilities the Law School offers: (1) a program of study in preparation for the practice of law; (2) programs of study and research on the graduate level for foreign as well as American students; (3) a continuing legal education program for members of the bar; (4) institutes and forums on current topics in domestic and foreign law; (5) the publication of a law journal containing the results of research in public law; and (6) the encouragement of student professional co-curricular activities.

PROGRAMS OF STUDY

Traditionally the Law School has been national in the geographic distribution of its students. At the present time, men and women holding baccalaureate degrees from more than three hundred colleges and universities come from the forty-eight states, the territories, and several foreign countries to comprise the student body. As a consequence the programs of study leading to the degrees of Bachelor of Laws and Juris Doctor have been planned to provide instruction and training for the practice of law wherever the Anglo-American legal system obtains.

Graduate work leading to the degrees of Master of Laws and Doctor of Juridical Science is offered for those desiring further study and research in specialized fields of law.

Provision is made for advanced study by members of the bar who do not desire to register as candidates for degrees. Lawyers may take courses for this purpose either as unclassified graduate students or as continuing legal education students.

Graduate work is offered also to meet the needs of lawyers who come from countries whose legal systems are not based on the English law. There are two programs of study, one leading to the degree of Master of Comparative Law for lawyers planning to return to their own countries, and the other leading to the degree of Master of Comparative Law (American Practice) for lawyers planning to remain in this country for the practice of law.

ORGANIZATION OF THE CURRICULUM

The curriculum is organized so that students may enter the Law School at the beginning of the fall or spring semester of the academic year, or at the beginning of the summer term. (For summer term information, see page 35.)

MORNING AND EVENING DIVISIONS

Morning classes, other than Trial Practice Court, meet for fifty-minute periods between 9:10 A.M. and 1:00 P.M., Monday through Friday; Trial Practice Court meets for a two-hour period from 9:30 to 11:30 A.M. on Saturday.

Evening classes meet for two fifty-minute periods from 5:50 to 7:40 P.M., Monday through Friday. A four-credit course, e.g., Torts, meets two evenings a week; a two-credit course, e.g., Personal Property, meets one evening a week. The evening division conforms to the standards of the morning division and has the same teaching staff.

THE LIBRARY

The Law Library of 50,900 volumes contains the official reports of the decisions of the courts of last resort of all states prior to the National Reporter System, and of some states complete to date; the National Reporter System, complete; the reports of the United States Supreme Court and lower federal courts, and the reports of federal administrative agencies; Shepard's Citations for the units of the Reporter System; the English Reports, Full Reprint; the English Law Reports; the Times Law Reports; the Dominion Law Reports; the United States statutes and codes; complete sets of statutes of all the states; the English statutes; the principal English and American digests and encyclopedias; collections of special reports and annotated cases; United Nations documents; leading textbooks and treatises; and practically complete sets of about 150 legal periodicals. A section of the library, consisting of books acquired from National University, is known as the National University Law Collection.

The international law collection, formerly the library of the Carnegie Endowment for International Peace, is available to law students.

The Library, which is on the fourth floor of Stockton Hall, is open from 9:00 A.M. to 10:00 P.M., Monday through Friday; from 9:00 A.M. to 5:00 P.M. on Saturday; and from 2:00 to 6:00 P.M. on Sunday. Books and other materials do not circulate and must be used in the library.

THE LAW REVIEW

The George Washington Law Review, published by the University, is edited and managed by students of the Law School under the supervision of faculty advisers. It is devoted exclusively to state and federal public law. The location of the University in the National Capital, where the primary sources of federal public law may be observed in operation, affords an unexcelled opportunity for specialization in this field.

The *Review* organization includes a faculty editor-in-chief, an associate faculty editor, a faculty board of advisory editors, a board of departmental advisory editors, and a board of student editors. The student editors are chosen each year on the basis of scholarship.

THE STUDENT BAR ASSOCIATION

Every student in the Law School is a member of the Student Bar Association, which is organized to enable students to become better acquainted with problems of the profession, to foster professional ideals, and to bring about closer contact with members of the profession engaged in active practice of the law.

The work of the Student Bar Association is carried on by various committees and by group and general meetings of a professional and social nature. From time to time lectures are given by outstanding authorities on legal and professional problems.

An important activity is the Van Vleck Case Club Competition, which provides an opportunity for training in appellate advocacy. First and second year students participate as contestants before courts composed of members of the Faculty and the local bar. Senior law students of the Case Club also sit as judges. The final argument is held before a court composed of distinguished federal judges.

ORDER OF THE COIF

The Order of the Coif, a national honor society with chapters in over forty law schools, aims "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." The George Washington University Chapter was established in 1926. Members are elected each year from the highest-ranking 10 per cent of the graduating class of the Law School.

ADMISSION

APPLICATION FOR ADMISSION

The Law School, as other colleges, schools, and divisions of the University, is coeducational.

An applicant for admission must obtain from the Office of the Director of Admissions of the University an application blank which he must fill out completely and return with the application fee of $5.

Two recent photographs must accompany the blank.

To insure prompt action, applications should be filed not later than August 1 for the fall semester, January 1 for the spring semester, and May 1 for the summer sessions.

Requirements concerning records of higher institutions previously attended are set forth on the sheet attached to the application blank.

Attendance at classes is limited to students registered for credit and continuing legal education students. "Auditing" classes is not permitted.

REQUIREMENTS FOR ADMISSION

For the Degrees of Bachelor of Laws and Juris Doctor

Bachelor of Laws.—A Bachelor of Arts or equivalent degree awarded upon completion of a four-year course in an approved college or university is required. The baccalaureate record must be of satisfactory quality and must include an acceptable distribution of courses. An applicant will not be admitted who has been in attendance at another law school and who is ineligible to return to that school in good standing. From the applicants, a selection will be made by the Committee on Admissions.

Juris Doctor.—A student does not register as a candidate for this degree until his last year in the Law School. For details, see page 30.

ADVANCED STANDING

Advanced standing toward the degree of Bachelor of Laws will be granted only for work successfully completed in other law schools which are members of the Association of American Law Schools. However, credits will not be recognized in excess of those which might be obtained in a similar period in this Law School.

Advanced standing will not be granted for law work already counted toward the Bachelor of Arts or other pre-legal degree.

Advanced standing will not be granted toward meeting the requirements for the degrees of Juris Doctor or Master of Laws.

For the Graduate Degrees

Candidates for graduate degrees must be accepted by the Committee on Graduate Studies.

Master of Laws.[*]—A Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree from a member school of the Association of American Law Schools are required. Candidates for admission must have attained a *B* average on all work done for the Bachelor of Laws degree, except that, at the discretion of the Committee on Graduate Studies, applicants otherwise eligible may be admitted on proof of experience and attainment as an alternative. Advanced standing will not be granted for credits earned while a candidate for the first degree in law. Credits earned as an unclassified student will not be applicable toward meeting the requirements of the degree unless specific provision therefor is included in the letter of admission.

Master of Comparative Law and *Master of Comparative Law (American Practice).*—The following are required: (1) the successful completion of and graduation from a course in arts, philosophy, letters, or sciences, equivalent to graduation from a gymnasium, lycee, or liceo; and (2) graduation in law from a recognized foreign university where training was in Civil Law.

Doctor of Juridical Science.—The following are required: a Bachelor of Arts or equivalent degree from an approved college or university and a Bachelor of Laws or equivalent degree, earned with high rank, from a member school of the Association of American Law Schools, and outstanding capacity for scholarly work in the field of law.

Unclassified Students

A person who is in good standing as a degree candidate in another law school which is a member of the Association of American Law Schools may, at the discretion of the Dean, be admitted as an unclassified student in order to earn credits for transfer to the other law school.

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[*] One-half of the work necessary for graduation from an approved college or university completed prior to entry into military service may be accepted as satisfying the admission requirement for pre-legal work, provided the applicant completed not less than twenty months of continuous service in the armed forces of the United States during World War II and prior to the beginning of the 1948–49 fall semester.

A person who is a member of the bar or a person, not a member of the bar, who is a graduate of a member school of the Association of American Law Schools may, at the discretion of the Dean, be admitted as a unclassified student.

Unclassified students participate in the work of the course and take examinations. Courses taken by unclassified students will not be credited toward degrees at this Law School.

Continuing Legal Education Students

A simplified admission and registration procedure is provided for members of the bar desiring to register as continuing legal education students to take courses on a noncredit basis. Members of the bar desiring to register as degree candidates or as unclassified graduate students should file the regular application for admission form.

REGISTRATION

Before attending classes each student must present himself in person for registration. No student will be registered in the Law School until proper credentials have been filed and approved (see "Admission", *above*).

Registration is for the semester or session only.

A late-registration fee of $5 will be charged each student who is permitted to register after the regular registration days.

Registration may be changed only with the permission of the Dean.

FEES AND FINANCIAL REGULATIONS

Application fee, charged each applicant for admission, nonrefundable	$5.00
Tuition fee, for each semester hour for which the student registers	20.00
For the degree of Doctor of Juridical Science:	
For work leading to and including the final examinations	540.00
Student Bar Association fee, charged each student in the Law School for each semester or any part thereof except the summer sessions	3.00
Graduation fee	25.00
Fee for printing summary of doctoral dissertation	85.00
Fee for special examinations, for each subject	5.00
Late-registration fee, charged each student who fails to register within the designated period	5.00
Residence fee, charged each student wishing to maintain "in residence" status during any semester of absence from the University or after completion of tuition requirements	20.00
Service fee, charged each student for late payment of tuition, see "Payment of Fees"	2.00
Reinstatement fee, charged each student who is reinstated after being suspended for delinquency in fees	5.00

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library facilities, except as otherwise designated; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet,* the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described under "Health Administration", pages 28–29. These privileges, however, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

Payment of Fees

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each semester are due and payable in advance at the time of registration.

Subject to the approval of the Treasurer, a student may sign a contract for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One third at the time of registration; one third on November 3; one third on December 1.

Spring Semester.—One third at the time of registration; one third on March 2; one third on April 1.

A student who fails to meet payments when due but who pays his fees on or before the fifteenth of the month in which payment is due is charged a service fee of $2. A student who fails to meet payments by the fifteenth of the month in which payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of $5.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

Withdrawals and Refunds

Application for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean. Notification to an instructor is not an acceptable notice.

In authorized withdrawals and changes in schedules, financial adjustments will be made as follows:

Fall Semester.—Withdrawal dated on or before October 31, cancellation of two-thirds of tuition charges; withdrawal dated on or before November 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to November 30.

Spring Semester.—Withdrawal dated on or before February 28, cancellation of two-thirds of tuition charges; withdrawal dated on or before March 31, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to March 31.

In no case will a refund be made of the first third of the total tuition charges unless the registration is in advance and the course is dropped before the regular registration day. In this case a withdrawal fee of $5 is charged and tuition fees refunded. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this payment be credited to another semester.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

Withdrawal from a course or from the University between October 31 and the end of the fall semester and between February 28 and the end of the spring semester is permitted only in exceptional cases.

The grade of *F* (to be counted as zero) will be given in a course dropped without the approval of the Dean.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

FELLOWSHIPS, SCHOLARSHIPS, PRIZES, LOAN FUNDS

Law School Research Assistantships.—Student research assistantships are available each year to students currently enrolled in the Law School, preference being given to applicants who are completing their second year. Each assistant receives an annual stipend. Awards are made on the basis of academic standing, financial need, and capacity for leadership. Research assistants have duties similar to those of teaching fellows. Applications should be submitted to the Dean of the Law School not later than May 1.

Law School Teaching Fellowships.—Teaching fellowships are available each year to prospective candidates for the Master of Laws degree. Each fellow receives an annual stipend, plus tuition for the academic year. Teaching fellows follow an approved program of study and research, assist members of the Faculty in the guidance of first year students, and supervise student work in legal bibliography and the drafting of legal instruments. Upon satisfactory completion of the year's work, a fellow is recommended for the degree of Master of Laws. Applications should be submitted to the Dean of the Law School not later than March 1.

Charles Worthington Dorsey Memorial Scholarship.—This scholarship, established in 1947 as a memorial to Charles Worthington Dorsey, Bachelor of Laws, '81, Master of Laws, '82, is awarded upon the recommendation of the Faculty of the Law School to a needy and promising graduate of Columbian College or other division of the University, with a Bachelor of Arts or other equivalent degree, who has maintained an average of *B* as an undergraduate student and who desires to pursue the study of law as a full-time student. The scholarship covers tuition for the course leading to the first degree from the Law School, Bachelor of Laws or Juris Doctor, provided that the holder maintains an average of *B*. The right is reserved to suspend the benefits of the scholarship for cause at any time. The scholarship is awarded ordinarily once every three years.

Law School Scholarships.—Scholarships are available each year in the Law School to graduates of accredited colleges. Each scholarship provides full three-year tuition in the morning division of the Law School. Candidates must have graduated in the upper fifth of their class and must have demonstrated qualities of leadership in addition to scholastic attainment. To retain the scholarship, the successful candidate must maintain a *B* average. Application must be made before March 1 to the Dean of the Law School.

Phi Delta Delta Scholarship.—Zeta Chapter of Phi Delta Delta Legal Fraternity (International) offers annually a scholarship in the amount of $40 to the woman student in the sophomore class who has excelled in scholastic achievement and service to the Law School in her first year.

Ellsworth Prize.—The Ellsworth Prize of $25, established by the late Mr. Fritz von Briesen, is awarded to the student doing the best work in the subject of Patent Law Practice.

Charles Glover Prize.—This prize, established in 1957 by Charles Carroll Glover, Jr., a Trustee of the University, in memory of his great-grandfather, Charles Glover, an illustrious member of the bar of the District of Columbia, consists of selected law books and is awarded annually to the student in the Law School who has attained the highest average grade in the third-year, full-time course.

John Bell Larner Prize.—This prize, established by the bequest of John Bell Larner, consists of a medal which is awarded annually to that member of the graduating class in the Law School who attains the highest average grade in the entire course for the degrees of Bachelor of Laws or Juris Doctor.

John Ordronaux Prizes.—These prizes were established in 1909 by the bequest of John Ordronaux.

The amount of $75 is awarded annually to the student in the Law School who has attained the highest average grade in the first-year, full-time course; and $75 to the student who has attained the highest average grade in the second-year, full-time course.

Through the generosity of friends of the University a number of loan funds are available to students in the Law School. Among them is the Henry Strong-William A. Maury Loan Fund established by the Henry Strong Educational Foundation in memory of Henry Strong and William A. Maury. Application for loans should be made to the Treasurer of the University.

REGULATIONS

Students in the Law School are subject to, and are expected to familiarize themselves with, the general University regulations stated in the University Catalogue.

AMOUNT OF WORK

Students without substantial outside employment may take a program of studies of fourteen hours a week. Such students may take courses in the evening only if they are not available in the morning and if a majority of the hours taken are in morning courses. Students, whether in the morning or evening division, with substantial outside employment must take a limited program of studies not exceeding ten hours a week. Students taking a majority of their classes in the evening may not take more than ten hours a week. A minimum schedule of ten hours in the morning division and six hours in the evening division is required except in exceptional circumstances when, as to continuing students, a reduced program is authorized by the Dean.

ATTENDANCE

Regular attendance at classes is required and is necessary for successful work. A student who is deficient in class attendance in any course may be barred from taking the examination.

RESIDENCE REQUIREMENTS

Candidates for the degree of Bachelor of Laws must complete a residence period of three academic years. Attendance in the morning division for the fall and spring semesters constitutes residence for an academic year; similar attendance in the evening division constitutes residence for three-fourths of an academic year. Consequently, a morning student must attend six semesters to meet residence requirements; an evening student must attend eight. Students authorized to take schedules of less than ten hours in the morning division or less than six hours in the evening division receive residence credit on a proportional basis. Students who attend the summer sessions receive fractional residence credit. For details, see page 35.

Students planning to attend summer school sessions at other law schools and desiring to use credits obtained at such schools in their course at this Law School must first have the courses they wish to take approved by the Dean. In no event will credits be recognized in excess of those which might be obtained in a similar period in this School.

GRADUATION REQUIREMENTS

Application for Graduation.—Application for a degree should be filed in the Office of the Registrar at the time of registration for the last semester of the senior or final year.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation in absentia is approved by the Dean.

EXAMINATIONS

Written examinations are held at the end of each course. Every student is required to take the regular examinations unless excused. No excuse for absence will be granted except by the Dean and then only for illness or other emergency. Application for excuse must be made in writing not later than one month after the date of the examination. A grade of *NG* (no grade) will be entered on the record of a student thus excused, and he may take the next regularly scheduled examination in the course for which the excuse has been granted.

No special examinations will be given; except that, upon written application to the Dean, showing sufficient cause, a candidate for a degree at a convocation before the next regular examination, if he would be entitled to take a postponed examination, may, at the discretion of the Faculty, be given a special examination.

If a student fails to take an examination, a grade of *F* (to be counted as zero) will be recorded unless he has been excused from the examination as provided above or has obtained the Dean's permission to drop the course.

GRADES

Grades are indicated by the letters *A*, excellent, 85–100; *B*, good, 75–84; *C*, satisfactory, 65–74; *D*, poor, 55–64—below standard for graduation; *F*, failed—below 55; and *NG*, no grade—student excused from failure to take regularly scheduled examination. See "Examinations" above, for grade upon failure to take an examination. The grades *A*, *B*, *C*, and *D* mean that the work has been completed and credit given for the courses. *F*, failed, means that no credit will be given. To obtain credit the student must repeat the course, except that a student who has obtained an average of *C* in the work of the semester just completed and the preceding semester and received a grade of *F* in only one course during those semesters may, with the consent of the Faculty, take the next regular examination in that course if he has not been excluded previously for low scholarship. If the failure occurs in the first semester, the succeeding semester is used as the second semester. The privilege is limited to taking the next regular examination, except that a candidate for a degree at a convocation before the next regular examination may be permitted to take a special examination at the end of the next semester. If on the reexamination the student receives a passing grade he will be given credit in the course. Both grades are recorded.

Exclusion and Probation for Poor Scholarship

Candidates for the Degrees of Bachelor of Laws and Juris Doctor.—A student who in one semester, or two successive semesters, fails in courses aggregating eight or more semester hours will be excluded, except that if currently registered he will be permitted to complete the work of the semester. Such a student is not eligible thereafter to be registered in the Law School or to attend classes. While excluded he may, however, with the consent of the Faculty, be admitted to the next regular examinations in those courses in which he has made a grade below passing, and if he receives a grade of passing in those courses with an average sufficient to make his cumulative average not less than *C*, he will be reinstated.

A student not subject to exclusion under the foregoing rule who at any time fails to maintain a cumulative average of at least *C* will be placed on probation. A student on probation may at the discretion of the Dean be required to reduce his program of study. If a student on probation does not, by the end of the second semester following that in which his average has fallen below *C*, receive grades sufficient to give him a cumulative average of at least *C*, he will be excluded.

The cumulative average of a student includes all the grades in all the courses taken while he is in the Law School as a candidate for a particular degree. When a course is repeated or a reexamination is taken, both the first grade and the subsequent grade or grades are counted in the cumulative average.

In special cases in which a student who has been excluded can clearly demonstrate that his low grades were due to special circumstances beyond his control and that he has the capacity to pursue the study of law with a definite likelihood of success, such student may be readmitted by the Faculty subject to such conditions as the Faculty may impose.

Candidates for Graduate Degrees.—A candidate for one of the graduate degrees whose work is not satisfactory in the opinion of the Faculty, taking into consideration the requirements and standards for the degree, may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

Unclassified Students.—An unclassified student whose work is not satisfactory in the opinion of the Faculty may, by action of the Faculty, be excluded at the end of the semester for which he is currently registered.

CLASSIFICATION OF STUDENTS

Candidates for the degree of Bachelor of Laws are divided into classes on the completion of semester hours as follows: first year, one through twenty-eight; second year, twenty-nine through fifty-six; third year, fifty-seven or more.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

STUDENT LIFE

LIVING ACCOMMODATIONS

The University maintains four residence halls. Meals are served at the Student Union.

Admission to the University does not include room reservation. A separate application for a room should be made well in advance (for the fall semester by May first, for the spring semester by January first). Forms for application, together with detailed information, may be obtained from the Director of Activities for Women or the Director of Activities for Men.

Information concerning private rooming and boarding facilities near the University, for women students twenty-one years of age or older and for men students, may be obtained at the Housing Office, Lisner Auditorium. The reservation of rooms in private houses must be made by students.

Girls under the age of twenty-one who are enrolled for twelve or more semester hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitories only with the permission and approval of the Director of Activities for

Women, upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitories except with persons approved by the Director of Activities for Women.

Women Students.—The Hattie M. Strong Residence Hall provides single rooms at $38 a month and double rooms at $33 a month a person.

The Dolly Madison Residence Hall provides double rooms at $33 a month a person.

Men Students.—Welling Hall provides double rooms for $30 a month a person.

The John Quincy Adams Residence Hall provides 70 double rooms, each with study alcove and bath. Rooms rent for $37.50 a month a person.

PLACEMENT

The University Placement Office, 2114 G Street NW., provides assistance to students seeking full- and part-time employment. This office maintains a registry of positions locally and nationally available and refers qualified applicants for consideration. Information is also available on Civil Service examinations.

The Law School takes a continuing interest in the placement of its graduates and maintains a placement service for that purpose. The Dean, the Faculty, and the University Placement Office cooperate in collecting information from alumni of the Law School, law firms, and government agencies concerning opportunities for legal positions throughout the country. Students and recent graduates are invited to discuss their placement problems with the Secretary of the Law School.

HEALTH ADMINISTRATION

The University maintains a health service that is primarily diagnostic in its intent. For medical emergencies and health consultations there is, on the Campus, a Student Health Clinic open from 9:00 A.M. to 5:00 P.M., with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge.

Medical privileges include: (1) the physical examination of every student entering from secondary school; (2) three visits by the University physician or surgeon, office or residence (District of Columbia), in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination; (3) hospitalization, including board and nursing in the University Hospital for not more than one week during any twelve month period—the necessity to be determined by the Director of Health Administration. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

This medical benefit does not apply to illness or disability incurred previous to the University semester or prior to payment of tuition fees.

The student is allowed, if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) the above regulations apply also during the summer sessions of the University.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of physical education.

THE DEGREES OF BACHELOR OF LAWS AND JURIS DOCTOR

The programs of study leading to the degrees of Bachelor of Laws and Juris Doctor are addressed to the development and application of legal principles, skills, and ideals which are indispensable to the equipment of a lawyer for professional responsibility and leadership in modern society. They include, first and foremost, the traditional core of legal education, namely, the study of legal materials—judicial, statutory, and administrative—and instruction in the technique of their use. These programs include the study of the nature and purpose of law, the history of the Anglo-American legal system, and the history and standards of the legal profession; practice in the skills of legal research and legal writing; elementary training in trial practice; and, through the medium of seminars, experience in group handling of legal problems.

REQUIREMENTS FOR THE DEGREES

Bachelor of Laws

To be recommended for the degree of Bachelor of Laws (LL.B.) the student must have completed a residence period of not less than three academic years (four years for evening students) and eighty semester hours, with a cumulative average of at least *C*. At least one academic year of residence and twenty-eight semester hours are required of students admitted with advanced standing. Credits allowed by way of advanced standing are not included in computing the average required for graduation.

JURIS DOCTOR

The degree of Juris Doctor (J.D.) is conferred as a recognition of the completion at the George Washington University Law School, with high rank, of the required program of study for the Bachelor's degree, including experience in research and legal authorship. To be recommended for this degree the student must have completed: (1) a residence period of not less than three academic years (four years for evening students); (2) eighty semester hours with a cumulative average of at least *B* including one of the following courses: Comparative Law, Jurisprudence, or one of the graduate seminars; and (3) one year of acceptable service on the board of student editors of *The George Washington Law Review*, election to which is subject to regulations laid down by the Faculty. All requirements for the degree must be completed at this Law School.

HONORS

The degree of Bachelor of Laws or of Juris Doctor "with distinction" will be awarded students who obtain a cumulative average of *A*.

CURRICULUM

Required and Elective Courses.—A program of required and elective courses has been developed in order to assure coverage of the basic courses as well as to allow a degree of flexibility to meet the diverse interests of students. All first-year courses, three second-year courses, and one third-year course are required, leaving a total of thirty-eight hours of electives. In general, second-year students are restricted to second-year electives but in appropriate cases the taking of third-year electives will be approved. Similarly, specially qualified third-year students may secure approval to take graduate courses and research in public law.

Practice and Trial Practice Court.—Classroom instruction is conducted in pleading and procedure, trial and appellate practice, and evidence. This instruction includes grounding in the principles of the Federal Rules of Civil Procedure and the Federal Rules of Criminal Procedure. In addition, each senior student is required to participate in the work of the Trial Practice Court, which includes the trying of cases as junior counsel and as senior counsel. A special section of the court is devoted exclusively to the trial of patent cases. Experience in preparing and arguing appellate court cases is available through the Case Club Competition.

Patent Law.—Students interested in patent law should take the following group of courses: Unfair Trade Practices, Patent Law I and II, Patent Office Practice, Patent Trial Practice Court, Federal Antitrust Laws, and Trade Regulation Seminar.

Curriculum.—Following is the curriculum for students beginning in the fall semester. Adjustments are made to meet the needs of students beginning in the spring semester and in the summer.

Morning Division

FIRST YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Contracts I	4	Agency	2
Legal Method and Legal System	4	Constitutional Law	4
Personal Property	2	Contracts II	2
Torts	4	Criminal Law and Procedure	4
		Real Property	2
Total	14	Total	14

SECOND YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Civil Procedure	4	Evidence	4
Conveyances	2	Electives	10
Electives	8		
Total	14	Total	14

THIRD YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Trial Practice Court	2	Trial Practice Court	2
Electives	10	Electives	10
Total	12	Total	12

Evening Division

FIRST YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Contracts I	4	Contracts II	2
Legal Method and Legal System	4	Criminal Law and Procedure	4
Personal Property	2	Torts	4
Total	10	Total	10

SECOND YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Agency	2	Constitutional Law	4
Civil Procedure	4	Conveyances	2
Real Property	2	Electives	4
Elective	2		
Total	10	Total	10

THIRD YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Electives	10	Evidence	4
		Electives	6
Total	10	Total	10

FOURTH YEAR

FALL SEMESTER	Semester Hours	SPRING SEMESTER	Semester Hours
Trial Practice Court	2	Trial Practice Court	2
Electives	8	Electives	8
Total	10	Total	10

GRADUATE PROGRAM

DEGREES OF MASTER OF LAWS AND DOCTOR OF JURIDICAL SCIENCE

The administration of justice under law is a matter so vast and complex that some graduates feel the need for further study in order to broaden and deepen their understanding of the law. Others wish to extend their study into rapidly developing specialized fields. Graduate instruction, leading to the degree of Master of Laws, is therefore offered to enable qualified students to attain one or both of these objectives.

The degree of Doctor of Juridical Science is offered for selected students whose aim is to extend still further their studies by pursuing original research in law.

Graduate work is available to evening as well as morning students in order that lawyers in private practice and in government service may engage in advanced study or in original research.

PROGRAMS OF STUDY FOR FOREIGN LAWYERS

Two programs of study are provided to meet the needs of lawyers who come from countries whose legal systems are not based on the English law. For such lawyers, whose aim is to acquire an understanding of our system so that they may work intelligently with its materials and practitioners after returning to their own countries, there is available the degree of Master of Comparative Law. For foreign lawyers, however, who wish to practice in a common law jurisdiction there is available the degree of Master of Comparative Law (American Practice) with an appropriate program of study. With respect to both programs, the students are not assigned to special classes but work in association with the other students in the regular courses, each student's program being adapted to his individual needs.

NONDEGREE STUDY: CONTINUING LEGAL EDUCATION

As a result of changes and expansion in various fields of the law many lawyers pursue graduate study in order to keep abreast of current developments. Consequently, an important part of the graduate program is to provide for members of the bar not desirous of becoming degree candidates. The offerings in the field of governmental regulation provide opportunities for specialization. Although third-year and graduate courses are particularly suitable, first-year and second-year courses may be taken in appropriate cases. Members of the bar taking graduate work in this way register as unclassified students or as continuing legal education students.

RESEARCH IN PUBLIC LAW

Research in public law is conducted under the supervision of members of the Faculty. The purpose of this research is to furnish means for training specialists in public law, either as government lawyers or as lawyers representing individuals or corporations in cases in which the Government is a party, and to assist in the analysis, clarification, formulation, and improvement of public law, substantive and procedural.

Candidates for the graduate degrees in the Law School and specially qualified seniors may pursue this work.

REQUIREMENTS FOR THE DEGREES

MASTER OF LAWS

To be recommended for the degree of Master of Laws (LL.M.) the student must have completed a residence period of not less than two semesters. Such residence should normally be continuous. All requirements for the degree must be completed in this Law School and in a period not exceeding two years after registration for work for the degree. The student must have completed, with a minimum average of *B*, twenty semester hours in courses listed in the law curriculum as graduate courses except that in appropriate cases third-year courses may be approved for inclusion in the program of study if not previously taken.

MASTER OF COMPARATIVE LAW

The degree of Master of Comparative Law (M.Comp.L.) is for foreign students who intend to return to their countries. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed satisfactorily twenty-four semester hours in approved courses in the curriculum of the Law School or of such other departments of the University as the Faculty of the Law School shall approve.

MASTER OF COMPARATIVE LAW (AMERICAN PRACTICE)

The degree of Master of Comparative Law, American Practice (M.Comp.L.(Am.Prac.)) is for foreign students who intend to remain in this country. To be recommended for this degree the student must have completed a residence period of not less than one academic year. He must have completed twenty-eight semester hours in approved courses in the curriculum of the Law School with a cumulative average of at least *C*.

DOCTOR OF JURIDICAL SCIENCE

To be recommended for the degree of Doctor of Juridical Science (S.J.D.) the student must have completed a residence period of not less than one academic year. He must have pursued a course of study and research designated by his consultative committee and approved by the Committee on Graduate Studies. At the conclusion of his first year of residence, or at such other time as the Committee on Graduate Studies may set, the candidate must pass an oral examination in those fields of study selected by the consultative committee. This examination shall be conducted by the consultative committee and such other members of the Faculty and qualified experts as may be selected by the Committee on Graduate Studies.

Not later than the date specified in the University calendar the candidate must submit to the Dean one typewritten original and two legible and complete carbon copies of his dissertation in its final form. The dissertation must contain a summary of from 2,500 to 3,000 words inserted as an appendix. An additional original typewritten copy of this summary must be submitted for publication. To be acceptable the dissertation must, in the opinion of the examining committee, constitute a substantial contribution to the field of law concerned and be suitable for publication. Additional information will be supplied by the Chairman of the Committee on Graduate Studies.

The summaries of accepted dissertations will be printed in a volume forming a number of the University BULLETIN. The successful candidate for the doctorate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

SUMMER TERM

A term of two sessions, with morning and evening classes, is offered in the summer. Beginning students may start their studies in the first session only; continuing students and transfer students may register for either or both sessions.

The summer term is shorter than a semester of the academic year, and, as a consequence, a student must attend two and one-half summer terms to receive residence for one academic year or attend one and one-half summer terms to receive residence for a semester.

A maximum of six semester hours may be taken each session by morning students. Such students will receive two-fifths of a term of residence credit upon the completion of four or six semester hours in one session, and will receive four-fifths of a term of residence credit upon completion of eight or more semester hours in two sessions. A maximum of four semester hours may be taken each session by evening students. Such students will receive three-tenths of a term of residence credit upon the completion of four semester hours in one session, and will receive six-tenths of a term of residence credit upon the completion of six or eight semester hours in two sessions.

Summer students planning to take the New York bar examination must register at the beginning of the term for both sessions and must complete both.

COURSES OF INSTRUCTION

COURSES OF INSTRUCTION

The courses of instruction listed below are subject to change. The University reserves the right to withdraw any course announced.

First-year courses are numbered from 100 to 200; second-year courses, from 201 to 300; third-year courses, from 301 to 400; and graduate courses, from 401 to 500.

The number of hours of credit given for the satisfactory completion of a course is indicated in parentheses after the name of the course. Thus, a year course giving two hours of credit each semester is marked (2–2), and a semester course giving two hours of credit is marked (2).

Morning classes begin at 9:10 A.M. Evening classes begin at 5:50 P.M.

FIRST YEAR

100 *Agency* (2) Cooper

Fall—evening; spring—morning.

Master and servant (status of agent), respondeat superior, nature of agency relation, actual authority, parties (disclosed and undisclosed principal), unauthorized transactions, notice, notification.

110 *Constitutional Law* (4) Collier, Mallison, Dixon

Spring—morning and evening.

Historical introduction, judicial approach and methods, doctrine of the separation of powers, powers of the National Government; the federal system and relation of federal and state courts; introduction to civil rights and liberties.

115–16 *Contracts I, II* (4–2) Mayo, Ledakis

Academic year—morning and evening; summer 1958.

Scope of protection accorded contracts; specific performance of contracts other than land transactions; damages, restitution. Mutual assent: offer and acceptance, misunderstanding, mistake, reformation, parol evidence rule. Consideration, third party beneficiaries, assignments, conditions, Statute of Frauds.

125 *Criminal Law and Procedure* (4) Murdock, Cooper

Spring—morning and evening; summer 1958.

Origin and purposes of criminal law; elements of criminal liability; mental disorders; solicitation, attempt, and conspiracy; crimes against the person, against property, and against both; statutory offenses; criminal procedure, with consideration of Federal Rules of Criminal Procedure.

135 *Legal Method and Legal System* (4) Fryer, Benson, Davison, Merrifield, Walburn, Burke, Ledakis

Fall—morning and evening; spring—morning and evening; summer 1958.

Introduction to substantive and procedural law dealing with basic concepts; training in method and technique of case law and legislation using modern case records; practice in use of law books and in legal writing; importance of language in law; legal reasoning and use of precedents under doctrines of stare decisis, law of the case, and res judicata; development of Anglo-American legal system; organization of judiciary and bar, stressing enforcement of ethical standards.

145 *Personal Property* (2) Fryer, Dixon, Mallison, Young

Fall—morning and evening; spring—morning and evening; summer 1958.

Concepts of property, including interests created by bailments, liens, and pledges; methods of acquiring ownership.

150 *Real Property* (2) Benson, Walburn, Ledakis

Fall—evening; spring—morning; summer 1958.

Historical background of the law of estates and conveyances, possessory estates, concurrent estates.

160 *Torts* (4) Merrifield, Walburn, Garrett

Fall—morning; spring—evening.

Liability for harm to persons or tangible things; defamation and invasion of privacy.

SECOND YEAR

200 *Administrative Law* (4) Davison

Spring—morning and evening; summer 1958.

The position of the administrative process in the separation of powers, including the status of administrative personnel, administrative hearings, judicial scrutiny of administrative action, discretion, and rulemaking—particularly as relating to federal administrative agencies.

205 *Brief Writing and Oral Argument* (2)

Not offered 1958–59.

Exposition and study of the basic techniques of written and oral legal argumentation. Each student will be required to write, as a term paper, a brief presenting contentions based on the actual record in an unargued case.

210 *Business Associations* (4) Weaver, Young

Spring—morning and evening; summer 1958.

Contrast of the partnership and corporation as alternative forms of organization; organizing partnerships and corporations—formalities, capital contributions, share structure; problems of operation; relations between partners; roles of shareholders, directors, officers; control devices; distributions to owners; voluntary reorganization; dissolution and termination.

215 *Civil Procedure* (4) Walburn, Burke

Fall—morning and evening; summer 1958.

Pleadings, discovery, joinder, forms of trial and related proof problems. Emphasis is on Federal Rules of Civil Procedure and other modern codes.

219 *Commercial Paper* (4) Orentlicher, Ledakis

Fall—morning and evening; summer 1958.

Bills of exchange, promissory notes and checks, especially under the Negotiable Instruments Law.

224 *Commercial Transactions* (4) Orentlicher

Spring—morning and evening.

The law relating to the sale and distribution of goods, and to the security financing devices utilized in this connection, with particular attention to the effect of uniform laws.

230 *Conveyances* (2) Benson, Walburn

Spring—morning and evening; summer 1958.

Conveyances, recording; easements, profits, covenants, and equitable servitudes; adverse possession and adverse user.

235 *Domestic Relations* (2) Mallison, Young, Krash

Fall—morning and evening; summer 1958.

Marriage, annulment, and divorce; adoption and custody of children; economic relations.

240 *Evidence* (4) Fryer, Weston

Spring—morning and evening; summer 1958.

Functions of court and jury; qualification and examination of witnesses; opinion, relevancy and scientific evidence; proof of writings; application of the hearsay rule.

243 *Federal Jurisdiction* (2) Cooper

Fall—morning and evening.

Constitutional and statutory origins of federal courts, cases arising under the laws and the Constitution, diversity of citizenship, jurisdictional amount, removal procedure and jurisdiction, limitations on federal jurisdiction, state and federal conflicts, substantive law applied by federal courts.

248 *Future Interests* (2) Benson

Fall—evening; spring—morning.

Future interests at common law and under modern statutes, construction of limitations, powers of appointment, rule against perpetuities.

251 *Insurance* (2) ———

Fall—evening; summer 1958.

The insurance device in life, property, and other risks.

254 *International Law* (4) Murdock, Mallison

Fall—evening; spring—morning.

The basic course. General survey of rights and duties of states; law of war and peace, including nationality law, international claims, pacific settlement of disputes, treaties, United Nations and World Court; study of source materials of International Law.

259 *Labor Law* (4) Merrifield

Spring—morning and evening.

Law governing labor-management relations, organization and representation of employees, regulation of economic weapons, enforcement of collective bargaining agreements, interunion and intraunion relations.

265 *Legal Accounting* (2) Hambrick

Fall—morning; spring—evening; summer 1958.

A study of elementary accounting principles and techniques; application of accounting principles to legal problems.

270 *Legislation* (2) Davison, Mallison

Fall—evening; summer 1958.

The legislative process, with particular emphasis on its operation in federal and state governments; legislative organization and procedure; statutory interpretation.

274 *Taxation—Federal Estate and Gift* (2) Hambrick

Fall—morning and evening.

A survey of the substantive provisions of the federal estate and gift tax laws, including ***inter vivos*** transfers, transfers in contemplation of death, joint interests, life insurance proceeds, property subject to powers of appointment, the marital deduction and split gifts; tax procedure.

279 *Taxation—Federal Income* (4) Fey, Hambrick

Fall—evening; spring—morning; summer 1958.

A study of the federal income tax, including construction of statutes, practice and procedure, and legislative policy.

285 *Trusts and Estates* (4) Weaver, Young

Fall—morning and evening; summer 1958.

Formalities of execution of wills; problems of construction, revocation, contest; limits on testamentary power; intestate succession. Creation of trusts, *inter vivos* and testamentary; administration of decedents' estates and trust estates.

295 *Unfair Trade Practices* (4) Weston

Fall—morning and evening.

Unfair trade practices at common law and under statutes; trademarks, trade names; copyright law; misappropriation of ideas; protection of competitors and consumers against false advertising under Federal Trade Commission Act; resale price maintenance under state Fair Trade Acts; miscellaneous business practices.

THIRD YEAR

300 *Admiralty* (2) Davis

Spring—evening.

Federal and state jurisdiction; jurisdiction over waters, craft, contracts, torts, crimes, in equitable matters, etc.; laws applicable to maritime workers and maritime liens.

303 *Aviation Law* (2)

Not offered 1958–59.

Procedure before Civil Aeronautics Board; legal problems arising in connection with air transportation and airports, international conventions and organizations.

307 *Comparative Law* (4) Murdock

Fall—evening.

The Civil Law System; general introduction to foreign law as exemplified by Roman Law and the modern French Law; comparative study of administration of justice, legal institutions, and methods for international law practice and working with foreign lawyers.

309 *Conflict of Laws* (4) Collier, Dixon

Fall—morning and evening; summer 1958.

Study of cases involving foreign elements; principles of jurisdiction and limitations upon its exercise; procedure, torts, workmen's compensation, contracts, property, family law, administration of estates, business associations.

313 *Constitutional Interpretations* (2) Collier

Not offered 1958–59.

Advanced course in constitutional law. The Constitution and constitutional tradition; doctrines of limited government, separation of powers, implied limitations on legislative power, and significance of "due process" in current constitutional developments. Introduction to comparative constitutional law, with studies in the constitutional law of selected states of the Union.

318 *Creditors' Rights* (4)

Not offered 1958–59.

Remedies of unsecured creditors; judgments, fraudulent conveyances, creditors' agreements, equity and statutory receiverships, and bankruptcy. The general approach is that of law administration.

321–22 *Current Decisions* (2–2) Weston

Academic year—morning and evening.

Required of, and limited to, members of the student staff of the *Law Review*.

330 *Federal Antitrust Laws* (4) Weston

Spring—evening.

Restraints of trade at common law and under Sherman Antitrust Act of 1890, Federal Trade Commission and Clayton Acts by mergers, monopolies, price-fixing agreements, trade associations, exclusive-dealing agreements, tie-in sales, and trade boycotts; patents and copyrights under antitrust laws.

335 *Jurisprudence* (2) Collier

Fall—morning and evening.

History of jurisprudence; schools of jurists, particularly the nineteenth century schools; sociological jurisprudence; theories of justice; the nature of law; law and morals; law and the state; the scope and subject matter of law; sources and forms of law; the traditional element; analysis of general legal concepts.

339 *Labor Arbitration* (2) Merrifield

Spring—evening.

Labor arbitration and collective bargaining; role of the lawyer in negotiation and administration of collective labor agreements; practices, procedures, and substantive issues in labor arbitration.

341 *Labor Standards and Social Security Legislation* (2) Merrifield

Fall—evening.

Legal problems arising under federal and state statutes dealing with labor standards and social security. Particular emphasis is placed upon the regulation of wages and hours, workmen's compensation, and insurance against unemployment and old age.

345 *Legislative Drafting* (2) Zinn

Fall—evening.

Advanced instruction and practice in legislative drafting.

349 *Local Government Law* (2) Mallison

Fall—evening.

Types and objectives of city, county, and special function local governmental units; intergovernmental relations; original organization and changes; local lawmaking; community planning and development.

355 *Mortgages* (2) Orentlicher

Summer 1958.

Security interests in real property, their creation, transfer, enforcement, and extinguishment.

359 *Patent Law I** (2) Robillard

Fall—evening.

Origin and nature of patents, patentable subject matter, classes of patents, novelty, utility, invention, patent claims and their interpretation, acts constituting infringement, correction of patents.

360 *Patent Law II* (2) Harris

Spring—evening.

Lectures and discussion: licensing and protection of industrial property; uses and abuses of patents; governmental regulation; protection abroad; economic and social functions of patents, trade-marks, and copyrights. Prerequisite: Law 359.

362 *Patent Office Practice** (2) Rose

Spring—evening.

Rules and practice; appeal and interference procedure.

365–66 *Patent Trial Practice Court** (2–2) Brown, Federico

Academic year—evening.

Practice before the United States Court of Customs and Patent Appeals and the federal courts. Prerequisite: forty-two semester hours, including Law 215 and 240. Law 359, which is also required, may be taken concurrently.

This course may be elected instead of Law 385–86 to satisfy the Trial Practice Court requirement.

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* Patent law students should take Law 359 and Law 365 concurrently in the fall semester and Law 362 and Law 366 concurrently in the spring semester.

370 *Public Utilities* (2) Fryer

Spring—evening.

Regulation by federal, state, and municipal authorities concerned with licensing, rates, services, and practices, with emphasis on federal regulation of interstate operations; judicial review.

376 *Restitution* (2) Burke, Orentlicher, Mayo

Spring—morning and evening; summer 1958.

Remedies at law and in equity for restitution of benefits conferred, especially as based on the concept of unjust enrichment.

380 *Suretyship* (2) Orentlicher

Summer 1958.

The law of suretyship, especially in the context of accommodation credit and commercial and financial practices, with attention also to informal and nonconsensual suretyship relations and the place of suretyship principles in the solution of legal problems generally.

385–86 *Trial Practice Court* (2–2) Kirkland, Edgerton, Myers, Jackson, Herrick, Monk, Walsh, Kendrick, Skinker

Academic year—morning and evening.

Trial of assigned cases; trial tactics and techniques; pre-trial and court room procedures pursuant to Federal Rules.

To be taken in the senior year. Prerequisite: forty-two semester hours, including Law 215 and 240.

391 *World Law* (2)

Not offered 1958–59.

International organization; the legal aspects of the United Nations; international constitutional law.

GRADUATE COURSES

401 *Administrative Law Seminar* (2) Davison

Fall—evening.

Group study of specific problems in administrative law.

408 *Constitutional Law Seminar* (2)

Not offered 1958–59.

Group study of contemporary problems in constitutional law.

412 *Control and Use of Atomic Energy* (2) Mayo

Spring—evening.

Various legal problems involved in the control and use of atomic energy will be examined, including the Atomic Energy Act, the policy underlying the present government monopoly, the security problem of safeguarding atomic military information, the implications in prospective industrial control and use, and legal means of protecting personal interests against the possible consequences of atomic warfare.

416 *Criminal Practice and Administration* (2) Cooper

Spring—as arranged.

Group study of the fundamental aspects of criminal procedure with special reference to practice before the District of Columbia and federal courts; the law of arrest, searches and seizures, self-incrimination, the function of the preliminary examination and grand jury, sufficiency of indictments, trial procedure, and the order of pleas and motions. Registration limited to fifteen students.

420 *Estate Planning Seminar* (2) Weaver

Spring—evening.

Group study of the effective disposition of wealth, *inter vivos* and testamentary gifts, conservation for owner's future use, use of insurance, tax and administrative problems, business interests, pension and profit-sharing arrangements.

424 *Evidence and Trials Seminar* (2) Fryer

1959–60 and alternate years.

Study of selected problems involving presentation of documentary proof and expert testimony in connection with the reforms sought by the Uniform Rules of Evidence and recent developments in the field of forensic medicine.

428 *Food and Drug Law* (2) Goodrich, Kleinfeld

Spring—evening.

A lecture and discussion course dealing with the Federal Food, Drug, and Cosmetic Act and governmental controls thereunder. Both government and industry viewpoints are considered.

431 *Government Contracts I* (2) McIntire

Fall—evening.

A consideration of the basic power of the Federal Government to enter into contracts; the nature and construction of such contracts; normal and war or defense powers aspects of government procurement, including administrative and legislative policy and procedures; forms of contracts; standard clauses; advertised bid procedure problems; negotiated contracts; modification of contracts; remedies on contractual claims.

432 *Government Contracts II* (2) McIntire

Spring—evening.

Special problems in government contracts, including adjustments and relief; procedure for prosecuting claims under government contracts; attempts at price, cost, or profit control; termination.

437 *International—Comparative Law Seminar* (2) Murdock

Fall—evening.

Group study of contemporary problems in international and comparative law.

442 *Labor Law Seminar* (2) Merrifield

Spring—evening.

Group study of contemporary problems in labor law.

446 *Law of Money and Monetary Obligations* (2) Dach

Not offered 1958–59.

Introductory survey of the provisions of public law by which money is administered, relating particularly to the Federal Reserve System; the legal character of money and of monetary obligations; legal tender; the "dollar-for-dollar" rule and its limitations; protective clauses (gold, commodity, and index clauses). Particular emphasis will be given to the law relating to foreign money.

449 *Law of the Near East* (2) Liebesny

1959–60 and alternate years.

A study of the law of the Arab countries, including the basic principles of the Islamic law, an analysis of the present day codes, and an investigation of the Western influences on the laws of the Arab countries.

455 *Legal Problems in Modern Methods of Warfare* (2) Mallison

Fall—evening.

The contemporary international law of war: legal aspects of modern methods of coercion (economic, political, psychological, and military); regulation of hostilities; the special problems of atomic, bacteriological, and chemical weapons; war crimes.

459 *Military Law and Jurisdiction* (2)

Not offered 1958–59.

Sources of military jurisdiction; military law proper, including court-martial jurisdiction and procedures before, during, and after trial; military government; martial law; laws of war and treatment of offenders.

463 *Regulation of Communication Media* (2) Mayo

Fall—evening.

An examination of the legal doctrine relating to regulatory practices in the channels of mass communications, i.e., newspapers, motion pictures, and radio-television; analysis of the operational structure of the mass media and the pattern of control exercised by government, private associations, and various community groups; appraisal of the comparative utility of various regulatory techniques for implementing policies affecting these media; special emphasis will be placed on the functions of the Federal Communications Commission.

466 *Regulation of Securities and Securities Markets* (2) Kroll

Fall—evening.

A study of state and federal laws governing the offering and distribution of securities to the public by corporate issuers and others, the regulation of securities markets, and the rights and liabilities of purchasers under such statutes. Particular emphasis will be given to statutes administered by the Securities and Exchange Commission.

469 *Research in Patent, Trade-Mark, and Copyright Law* (2) Harris

Fall—as arranged; spring—as arranged.

Registration is limited to students who have taken Patent Law I and II and related courses including, as a rule, Trade Regulation Seminar, and who have at least a *B* average. A request in writing, with a proposed outline of the topic of research, must be submitted to the Dean at least one month prior to registration day. Registration is permitted for one semester only and the work must be completed within the semester.

471 *Research in Public Law* (2) The Staff

Fall—as arranged; spring—as arranged.

Registration is limited to students who have previously had a seminar or comparable course in the field of the proposed research and who have at least a *B* average. A request in writing, with a proposed outline of the topic of research, must be submitted to the Dean at least one month prior to registration day. Registration is permitted for one semester only and the work must be completed within the semester.

475 *Taxation—Corporate* (2) Hambrick

Fall—evening.

Case law and 1954 Internal Revenue Code provisions applicable to corporations; analysis of corporate distributions and liquidations, redemptions of stock, reorganizations and mergers; collapsible corporations, organization of corporations, sales of business enterprises; personal holding companies, accumulated earnings tax, and carry-overs.

480 *Taxation—Oil and Gas* (2) Hambrick

Spring—evening.

A study of the case law relating to percentage depletion, sales and transfers of interests in oil and gas properties; legal aspects of financing methods in oil and gas operations; application of partnership and corporation provisions of the 1954 Internal Revenue Code to oil and gas activities.

485 *Taxation Seminar* (2) Hambrick

Spring—evening.

Group study of special problems and recent developments in federal taxation.

492 *Trade Regulation Seminar* (2) Weston

Spring—evening.

Group study of current problems relating to unfair trade practices and federal antitrust laws.

495 *Urban Redevelopment* (2) Orentlicher

Fall—evening.

Selected problems in urban redevelopment and housing, with particular emphasis on programs under current federal and state legislation.

DEGREES CONFERRED

BACHELOR OF LAWS

FEBRUARY 22, 1957

Herman Hershel Bains Md.
B.S. 1950, University of Alabama
Francis Xavier Ballmann Ky.
B.S. in F.S. 1948, Georgetown University
Nathan Mann Briskin Mich.
B.S. in Ch.E. 1937, Wayne University
James Joseph Buckley N.H.
A.B. 1952, St. Anselm's College
Don Porter Bush S.D.
B.S. in E.E. 1952, South Dakota School of Mines and Technology
Donald Aubrey Cable Va.
A.B. 1949, Lake Forest College
Richard Lawrence Callaghan Mont.
B.S. in F.S. 1950, Georgetown University
Harry Richard Chew Va.
A.B. 1950, University of Virginia
George Huners Vidal Cooper Va.
B.M.E. 1951, The George Washington University
Edward Joseph Doyle Md.
B.S. 1950, Syracuse University
George Meade Emory Wash.
A.B. 1954, The George Washington University
Benjamin Richard Fern Calif.
A.B. 1942, Queens College
Alexander Raymond Field Va.
B.S. 1952, University of Michigan
Francis Xavier Gaegler, Jr. Md.
A.B. in Govt. 1954, The George Washington University
Lloyd M. Gerber Utah
B.S. 1953, Brigham Young University
John Williams Gwynne, Jr. Iowa
A.B. 1954, State University of Iowa
James Erskine Hamilton, Jr. D.C.
A.B. 1951, College of the Holy Cross
John Edward Hogan Minn.
A.B. 1954, University of Minnesota
Merrill Donaldson Knight III Va.
A.B. in Govt. 1951, The George Washington University
Donald Hook Chon Low Hawaii
A.B. 1953, Yale University
Jack Malkin D.C.
A.B. 1953, The George Washington University
Earle Rollins Marden, Jr. Md.
B.S. in M.E. 1951, University of Maryland
Roy Jerome Mason N.Y.
A.B. 1953, Mexico City College
William Bullard Mason D.C.
A.B. 1949, Dartmouth College
Emil Joseph Matas N.J.
B.S. in Ed. 1948, Villanova College
Ronald Gerard Maurice Conn.
A.B. 1952, Providence College
Wallace Hulley McGregor Fla.
A.B. 1953, University of Florida
Charles Leroy Menzemer Va.
B.S. in Ch.E. 1950, Missouri School of Mines and Metallurgy
Robert William Michell D.C.
B.M.E. 1950, New York University
Richard Glen Miller W.Va.
B.S. 1949, West Virginia University
James William Muskett II Va.
B.S. 1950, St. Joseph's College
Pedro Berardo Nogueras Va.
A.B. in Govt. 1954, The George Washington University
Joanne Patricia O'Neal Va.
B.S. in B.A. 1953, Madison College
Michael E. Rogers D.C.
B.S. 1948, Columbia University
William Gordon Taylor D.C.
B.S. 1950, University of Massachusetts
Saverio Peter Tedesco N.Y.
B.S. 1950, Fordham University
Edgar Arthur Thompson Pa.
B.S. in Ch.E. 1948, Purdue University
Irving Russell Thrall Va.
A.B. 1952, Wabash College
David Collard Venable D.C.
A.B. 1951, University of North Carolina
Daniel Brainerd Ventres, Jr. D.C.
A.B. 1952, Ohio Wesleyan University
Robert Francis White Mass.
B.S. in Ch.E. 1951, Northeastern University
Leon Daniel Wofford, Jr. Md.
B.S. in C.E. 1952, University of Texas
Jim Zegeer Va.
B.S. in E.E. 1951, West Virginia University

JUNE 5, 1957

Carthon Evans Aldhizer Va.
A.B. 1953, The George Washington University
Robert Earl Austin Pa.
B.S. in E.E. 1950, Pennsylvania State University
Frank David Barber Miss.
A.B. 1954, Mississippi Southern College
William T. Beeks, Jr. Wash.
A.B. 1954, University of Washington
Vincent Roland Boening Mich.
A.B. 1945, Oberlin College
Mark Edward Borton Va.
B.S. 1952, Arizona State College, Tempe
Robert Dulles Bourne N.Y.
A.B. 1950, University of Michigan

Charles Erle Brown Md.
B.S. in C.E. 1947, University of Maryland
William Stuart Brown Iowa
B.S. 1945, M.S. 1951, Iowa State College
David Stevens Byerly Md.
A.B. 1953, University of Virginia
John Lester Chaney, Jr. D.C.
A.B. 1953, The George Washington University
William Bogert Clinch Va.
A.B. 1950, Yale University
Edwin Remick Cooley Kans.
A.B. 1934, Municipal University of Wichita
Eugene Stephen Cooper Va.
B.E.E. 1950, Cornell University
James Carpenter Cranshaw R.I.
B.S. 1952, University of Rhode Island
Ira Jethro Crickenberger Va.
B.E.E. 1952, The George Washington University
Anthony Peter De Lio II Va.
B.S. 1953, Polytechnic Institute of Brooklyn
Harry Shuler Dent S.C.
A.B. 1951, Presbyterian College
Marlon William De Tuncq Mich.
A.B. 1951, University of Michigan
Blackwell Williams Dial Va.
A.B. 1949, University of Wyoming
Mary Joan Dickson N.J.
B.S. in Com. 1953. Rider College
Robert Allen Doherty D.C.
B.S. 1950, University of Idaho
David Lawrence Doughty Fla.
A.B. 1954, Mount Union College
Arthur Richard Eglington D.C.
B.Ch.E. 1953, University of Delaware
Robert Sydney Elliott Va.
A.B. 1949, Reed College
Ralph Tipton Fishburn Md.
A.B. 1948, University of Richmond
George Joseph Flynn, Jr. Md.
E.M. 1939, University of Minnesota
Herman Foster N.Y.
B.C.E. 1950, College of the City of New York
Roy Donald Frazier Md.
B.S. in Ch.E. 1950, University of Texas
Stanley Ormand Gilbert Md.
Jim William Gipple Wash.
A.B. 1954, The George Washington University
Ralph Ray Glenn N.C.
A.B. 1947, University of North Carolina
Edna Parker Goldberg D.C.
A.B. 1953, University of Arizona
Frederic T. Greenhalge Md.
A.B. 1945, Harvard University
A.M. in Govt. 1952, The George Washington University
Earle Harrison Harbison, Jr. Va.
A.B. 1948, Washington University
Eldridge Kendall Hayes, Jr. Va.
B.S. 1953, University of Maryland
Richard Carlton Hayward Md.
A.B. 1954, University of Maryland
Milton Heller Md.
B.S. in Phar. 1950, The George Washington University
Joseph Gregory Hitselberger Va.
A.B. 1951, Georgetown University

Charles Allen Hobbs D.C.
A.B. 1950, Yale University
Wilbur Ward Jennings Utah
B.S. 1954, Brigham Young University
Wilford Woodruff Johansen Idaho
A.B. 1951, Idaho State College
Charles Lloyd Johnson, Jr. Md.
B.S. in E.E. 1952, University of Maryland
Frank Pierce Jones, Jr. Texas
Elaine Schwartz Kahn Va.
A.B. 1947, Indiana University
Isadore Bernard Katz Va.
B.S. 1954, University of Maryland
Gerald Eugene Kiltz Va.
A.B. 1951, Louisiana Polytechnic Institute
Raymond Adam Kline Pa.
A.B. 1950, Lebanon Valley College
Peider Könz D.C.
Maturitat 1945, University of Zurich, Switzerland
License en Droit 1948, Doctorate Examinations 1949, University of Geneva, Switzerland
John Edmund Lahey Md.
B.S. 1953, University of Maryland
Carl John Lind, Jr. Texas
A.B. 1930, B.S. 1931, M.B. 1933, M.D. 1934, University of Minnesota
George Henry Main Md.
B.S. 1950, U. S. Merchant Marine Academy
Joseph Patrick Maloney D.C.
Ph.B. 1954, University of Notre Dame
William Carmen Mammarella Del.
A.B. 1950, University of Delaware
Edgar Thomas Martin Va.
B.S. 1938, M.S. 1953, Virginia Polytechnic Institute
Erica Laufer Mathur N.Y.
A.B. 1954, The George Washington University
Marlin K. McDaniel Ind.
B.S. 1954, Purdue University
Anne Whitfield Meriam Md.
A.B. 1936, The George Washington University
Harold Esiah Mesirow Md.
A.B. 1954, The George Washington University
Kenneth Lyall Miller Mich.
B.S. in E.E. 1951, Tufts College
Jerry Warren Mitchell Wash.
B.S. 1951, U. S. Merchant Marine Academy
Anthony Carmen Moscatello Pa.
Richard Paul Mueller S.C.
B.S. 1954, Muskingum College
Joseph Murray Va.
B.S. 1949, University of Richmond
Clinton Irwin Newman Va.
A.B. 1951, Pennsylvania State University
Theodore Lyman Niles N.Y.
A.B. 1941, Yale University
A.M. 1948, Columbia University
James Simpson Oldham Ky.
A.B. 1950, Centre College
Theodore Pedas Pa.
B.S. in B.A. 1953, Youngstown College
M.B.A. 1954, University of Pennsylvania
Henry Prusaczyk Md.
B.S. in Ch.E. 1951, Washington University

Marion Arden Rockwell	B.S. 1949, M.Lit. 1950, University of Pittsburgh	Pa.
Robert J. Rosenthal	A.B. 1937, University of North Carolina A.M. 1947, American University	Md.
Roger Neil Shaw	A.B. 1954, Catholic University of America	Md.
Herbert Kenki Shimabukuro	A.B. 1952, University of Hawaii	Hawaii
Dan Joseph Skubitz	A.B. 1954, University of Maryland	Kans.
Donald Kaye Smith	A.B. 1954, University of Maryland	Md.
Donald Martin Smith	A.B. 1952, Western Maryland College	Md.
Arthur Steuer	A.B. in Govt. 1954, The George Washington University	D.C.
Joseph Irving Stone	A.B. 1950, University of Michigan	Mich.
John Matthew Stoudt	B.S. in M.E. 1952, Pennsylvania State University	Pa.
Hana Taffet	A.B. 1949, The George Washington University	N.Y.
Norman Robert Taylor	B.S. 1951, University of Maryland	Md.
John Hanford Van Gordon, Jr.	A.B. 1950, Syracuse University	N.Y.
Louise Marie Van Hise	A.B. 1949, Hood College	N.Y.
Charles Edward Vautrain, Jr.	B.S. 1941, U. S. Coast Guard Academy	Md.
Edward Farrand Willett, Jr.	A.B. 1954, Emanuel Missionary College	Md.
John Christian Wren	A.B. 1954, Haverford College	W.Va.

OCTOBER 19, 1957

William Gerson Applestein	A.B. in Govt. 1955, The George Washington University	D.C.
Charles David Atchison	A.B. 1950, University of Missouri	Mo.
Allin Preston Baxter	A.B. 1952, University of Virginia	D.C.
David Emerson Bean	B.S. 1954, University of Utah	Utah
Charles Earhart Bouton	B.S. 1952, University of Maryland	Md.
Charles Moulton Brewer	A.B. 1953, University of Maryland	Md.
Albert LeRoy Carter	B.S. 1951, Purdue University	Ill.
Christ Christ	A.B. 1948, A.M. 1953, Middlebury College	N.C.
Thomas Raymond Cotter	A.B. 1951, St. Bonaventure University	Va.
Lohr Mitchell Dick	A.B. 1947, Princeton University	Va.
John William Flood Faircloth	A.B. 1955, Harvard University	Md.
William Paul Gormley	A.B. 1949, San Jose State College A.M. 1951, University of Southern California Ph.D. 1952, University of Denver	Calif.
Peter Paul Hanagan	B.S.S. 1954, Georgetown University	N.M.
John Benjamin Howerton	A.B. 1949, Richmond College A.M. 1956, University of Richmond	Va.
Richard John Jacobson	A.B. 1953, St. Anselm's College	N.H.
Peter James	B.S. 1954, University of Pennsylvania	Tenn.
Michael Thomas Kitsoulis	A.B. in Govt. 1953, The George Washington University	D.C.
Nelson Littell, Jr.	B.S. 1941, Pennsylvania State University	N.Y.
Jeffrey Neal Martin	A.B. 1950, University of Maine	Maine
William McKamey	A.B. 1953, University of Maryland	Tenn.
Leonidas Ralph Mecham	B.S. 1951, University of Utah	Utah
William Charles Miller	A.B. 1953, University of Maryland	Md.
John Charles Morris	B.M.E. 1952, North Carolina State College	N.C.
Peter James Neimo	B.S. 1922, U. S. Naval Academy M.S. 1930, Harvard University	Va.
Daniel Emmet Nelson	B.S. 1953, University of Utah	Utah
Leonard Bradwell Phillips	A.B. 1951, Yale University	Iowa
James Miller Russell	A.B. in Govt. 1949, The George Washington University	D.C.
Jere William Sears	A.B. 1950, Harvard University	Idaho
Edgar Sims, Jr.	B.S. 1951, East Tennessee State College	Va.
Bernard Malan Tanner	B.S. 1954, University of Utah	Utah
William Livingston Travis	B.S. 1933, U. S. Military Academy	Ga.
Theodore Robert Verkouteren	B.S. 1951, University of Maryland	Md.
Robert Oswald Webster	B.M.E. 1947, Ohio State University	Kans.
Clyde Franklin Willian	B.S. 1952, Rose Polytechnic Institute	Ill.
Earl Scott Wolfley	B.S. 1952, Brigham Young University	Wyo.
Charles Bryant Wood	B.S. 1951, American University	Va.
Donald Edward Zinn	B.S. in M.E. 1954, Pennsylvania State University	Pa.

BACHELOR OF LAWS IN NATIONAL UNIVERSITY

FEBRUARY 22, 1957

Edward James Brunenkant, Jr.		Va.
Leroy Vanderbilt Hall	A.B. 1942, Morehouse College	D.C.
Francis Carroll O'Brien	A.B. 1952, University of Maryland	Md.
Jalmer Oscar Rolfson		Md.

JURIS DOCTOR

FEBRUARY 22, 1957

Harley Earl Dilcher N.Y.
B.S. 1944, U. S. Coast Guard Academy
Armistead Williams Gilliam, Jr. D.C.
A.B. 1952, University of Virginia
Carroll Lewis Gilliam S.C.
A.B. 1949, A.M. 1950, University of South Carolina
George Saudray Harrington S.D.
B.S. 1952, Virginia Military Institute
William Eugene Hiller Va.
B.S. 1949, Tulane University
Henry Robert Lerner N.Y.
B.M.E. 1949, College of the City of New York
George Donald Malhiot N.J.
B.S. 1954, University of Maryland
Raymond Joseph Rasenberger Va.
A.B. 1949, Dartmouth College
Frederick T. Sadler Calif.
B.S. 1944, California Institute of Technology
George Herbert Weller Calif.
B.S. 1944, U. S. Coast Guard Academy
Raymond Warren Young N.J.
A.B. 1945, New Jersey State Teacher's College, Montclair
A.M. 1946, Rutgers University
Ph.D. 1949, Johns Hopkins University

JUNE 5, 1957

Richard Harry Bryer Va.
B.Ch.E. 1949, Clarkson College of Technology
George Prothro Coulter Md.
A.B. 1951, University of California at Los Angeles
Louis Howard Diamond D.C.
A.B. in Govt. 1954, The George Washington University
Edmund Henry Feldman Md.
A.B. 1954, The George Washington University
Antoinette Black Friedman N.J.
B.S. 1942, Florida State College for Women
Charles White Halleck Ind.
A.B. 1951, Williams College
Sidney Harris N.Y.
B.B.A. 1953, College of the City of New York
Thomas Hugh Jones Va.
B.S. in Ch.E. 1952, Michigan College of Mining and Technology
Mary Ellen McCorkle Va.
A.B. 1946, The George Washington University
Charles Alan Melton Okla.
A.B. 1955, University of Oklahoma
Harold Thomas Moore Tenn.
B.J. 1951, University of Missouri
Ralph Clarke Nash, Jr. Pa.
A.B. 1953, Princeton University
James Dallas Newton Md.
A.B. 1947, Hamilton College
Jason Carl Primack Mass.
A.B. 1954, Tufts College
David Robbins N.Y.
B.E.E. 1950, College of the City of New York
Bruce Zoffin Segal D.C.
A.B. in Govt. 1954, The George Washington University
Ewell Gene Wade Utah
B.S. 1953, BrighamYoung University
Byron Kerr Welch Okla.
A.B. 1949, University of Oklahoma
A.M. 1950, University of California
Daniel Pharr Worth D.C.
B.S. in M.E. 1949, Purdue University

OCTOBER 19, 1957

Walter Charles Bernkopf Va.
B.S. in E.E. 1949, University of Denver
Carl Ray Burns Iowa
A.B. 1948, Simpson College
A.M. 1949, State University of Iowa
Melvin Cohen D.C.
B.S. in Ch.E. 1948, Virginia Polytechnic Institute
James Hoagland French, Jr. W.Va.
A.B. 1952, West Virginia University
Donald Joseph Hayes Conn.
B.E.E. 1953, Cornell University
Paul Edmund McNulty Va.
A.B. 1952, The George Washington University
Suzanne Virginia Richards D.C.
(With distinction)
A.B. 1948, The George Washington University
Frieda Sucher Shapiro Md.
A.B. 1942, Brooklyn College
Harald Warren Strand Minn.
A.B. 1949, St. Olaf College
A.M. 1950, University of Wisconsin
Paul Grier Wilson, Jr. Fla.
A.B. 1950, University of Maryland

MASTER OF LAWS

FEBRUARY 22, 1957

Leroy Albert Brill D.C.
LL.B. 1938, The George Washington University

Robert Franklin Custard Va.
B.S. in Eng. 1950, LL.B. 1951, The George Washington University

William Hibbard Dana N.Y.
B.Ch.E. 1951, LL.B. 1953, Cornell University

Howard S. Levie N.Y.
A.B. 1928, LL.B. 1930, Cornell University

Benjamin Bernard Lipton Va.
LL.B. 1943, St. John's University

Charles Marshall Munnecke Minn.
A.B. 1927, LL.B. 1929, University of Minnesota

Hugh Albert Madison Shafer, Jr. Va.
A.B. 1951, University of Maryland
J.D. 1955, The George Washington University

Barnard Talbott Welsh Md.
A.B. 1955, Duke University
LL.B. 1938, University of Maryland

JUNE 5, 1957

Alfred Hugh Oliver Boudreau, Jr. Va.
A.B. 1940, Brown University
LL.B. 1949, Boston University

Millard Mundell Bush, Jr. Miss.
A.B. 1950, LL.B. 1951, University of Mississippi

Beverly Mosby Coleman Va.
B.S. 1922, U. S. Naval Academy
LL.B. 1928, The George Washington University

Marcus Bartlett Finnegan N.J.
B.S. 1949, U. S. Military Academy
LL.B. 1955, University of Virginia

Robert Owen Hetlage Mo.
A.B. 1952, LL.B. 1954, Washington University

Arthur Jerry Hillman Wis.
B.S. 1950, LL.B. 1955, University of Wisconsin

Drexel Dahlke Journey D.C.
B.B.A. 1950, LL.B. 1952, University of Wisconsin

Jack Larsen D.C.
A.B. 1942, Princeton University
A.M. 1947, University of Michigan
LL.B. 1952, The George Washington University

Bernard David Lipton D.C.
A.B. 1950, LL.B. 1952, New York University

Eugene Henry Ruark, Jr. Md.
B.S. 1950, Yale University
LL.B. 1956, The George Washington University

James Spool D.C.
B.E.E. 1950, Cooper Union
LL.B. 1955, The George Washington University

Jesse Kavanaugh Taylor III Texas
A.B. 1952, LL.B. 1954, University of Texas

John TeSelle Fla.
B.M.E. 1947, LL.B. 1951, University of Florida

OCTOBER 19, 1957

Donald Clement Helling Ill.
B.S. 1947, U. S. Military Academy
J.D. 1951, University of Chicago

MASTER OF LAWS IN NATIONAL UNIVERSITY

OCTOBER 19, 1957

David Lewis Moore N.Y.
A.B. 1936, Harvard University
J.D. 1951, University of Chicago

MASTER OF COMPARATIVE LAW

JUNE 5, 1957

Prasan Dulyadhamabiromya Thailand
LL.B. 1945, University of Thammasat, Thailand

Kovit Madhayomchantr Thailand
LL.B. 1948, University of Thammasat, Thailand

Ernesto Arquero Querubin Philippines
LL.B. 1947, Arellano University, Philippines
Ph.B. 1952, University of San Francisco

Alfons Paul Sergot D.C.
Magister Juris 1927, University of Poznan, Poland

Emilio Torres D.C.
B.S.E. 1933, National University, Manila
LL.B. 1937, University of the Philippines
B.S. in F.S. 1949, Georgetown University

Ananta Vimoljitta Thailand
LL.B. 1948, LL.M. 1952, University of Thammasat, Thailand

October 19, 1957

Prasert Choon-ngarm Thailand
B.S. 1941, Royal Thai Naval Academy, Thailand
LL.B. 1951, University of Thammasat, Thailand

Thyun Shik Park Korea
LL.B. 1955, Seoul National University, Korea

Master of Comparative Law (American Practice)

February 22, 1957

Joseph Limarzi D.C.
Dr.Jur. 1934, Royal University of Naples, Italy

Joseph Vitenas D.C.
LL.B. 1938, University of Vytautas the Great, Lithuania

June 5, 1957

Charles Joseph Wiesner D.C.
LL.D. 1929, Charles University of Prague, Czechoslovakia

October 19, 1957

Vladimir M. Kabes Va.
Dr.Jur. 1945, Charles University of Prague, Czechoslovakia

Asta Turner D.C.
Diploma in Law 1942, University of Tartu, Estonia

Doctor of Juridical Science

February 22, 1957

James Kenneth Gaynor Ind.
B.S. 1946, J. D. 1950, Indiana University
LL.M. 1953, The George Washington University
Dissertation: "Common Law Military Offenses"

Zuhair Elias Jwaideh D.C.
Licentiate in Law 1944, Royal College of Law, Iraq
M.C.L. 1952, The George Washington University
Dissertation: "Foreigners Under the Legal System of Iraq"

June 5, 1957

Donald Earle Bilger Va.
B.S. 1951, University of Colorado
J.D. 1954, LL.M. 1955, The George Washington University
Dissertation: "Judicial Determination of a Plea of Insanity in Avoidance of Penal Responsibility"

Cyril Francis Brickfield D.C.
LL.B. 1948, Fordham University
LL.M. 1953, The George Washington University
Dissertation: "Problems Relating to a Federal Constitutional Convention"

STUDENTS REGISTERED IN THE LAW SCHOOL

SPRING 1957, SUMMER 1957, FALL 1957

A

Abel, Tyler A.B. 1954, Amherst College	D.C.
Ablard, Charles David B.B.A. 1952, LL.B. 1954, University of Oklahoma	Okla.
Ables, Wendell Peyton B.S. 1954, University of Utah	D.C.
Adair, Warren James, Jr. A.B. 1953, University of Pennsylvania	Pa.
Adams, Harold Wallace B.S. in E.E. 1954, Purdue University	Va.
Adelfio, Antonio LL.M. 1955, McGill University	Md.
Adelman, Jack Morton B.S. 1954, Ohio State University	Ohio
Agmata, Victor, Jr. Ed.B. 1957, University of Hawaii	Hawaii
Akers, Alan Dayton B.S. 1957, University of Kansas	D.C.
Alber, Oleg Edward B.Ch.E. 1957, Rensselaer Polytechnic Institute	Va.
Albrecht, Harry Lyle LL.B. 1949, University of Michigan A.B. 1953, Western Michigan College of Education	Mich.
Aldhizer, Carthon Evans A.B. in Govt. 1953, The George Washington University	Va.
Alexander, Norman Duncan, Jr. B.B.A. 1952, LL.B. 1956, University of Oklahoma	Va.
Alford, William Curtis B.S. 1956, M.B.A. 1957, American University	Md.
Allen, Richard Comfort A.B. 1951, Knox College	Va.
Allnutt, Robert Frederick B.S. in I.E. 1957, Virginia Polytechnic Institute	Va.
Alteri, Anthony Paul, Jr. B.S. 1950, Pennsylvania State University	Md.
Anderson, David Carver B.S. 1952, University of Illinois	Fla.
Anderson, James Edward B.S. in M.E. 1956, Duke University	Pa.
Anderson, Kenneth George A.B. 1953, University of North Carolina	N.C.
Anderson, Roderick Bruce B.S. 1957, South Dakota State College	S.D.
Anderson, William Howard B.S. 1955, State University of Iowa	D.C.
Antonelli, Donald Ralph B.S. in E.E. 1957, Purdue University	Ill.
Applestein, William Gerson A.B. in Govt. 1955, The George Washington University	D.C.
Arnold, Donald James B.S. 1951, Lebanon Valley College	Md.
Astrup, Jens Leo B.S. 1956, North Dakota State School of Science	N.D.
Atchisson, Charles David A.B. 1950, University of Missouri	Mo.
Aubuchon, Frank David B.S. in M.E. 1957, University of Missouri	Mo.
Ausbeck, Paul James B.S. in M.E. 1952, Purdue University	Va.
Austin, Robert Earl B.S. in E.E. 1950, Pennsylvania State University	D.C.
Axtell, George Clifton LL.B. 1952, A.M. 1957, The George Washington University	Va.
Ayers, Reginald Lee B.S. 1952, Bowling Green College of Commerce	Md.

B

Baggott, William Keeffe B.S. in I.E. 1957, West Virginia University	W.Va.
Baker, Raymond Nicholas B.S. 1947, U. S. Naval Academy	D.C.
Baker, Waldon Lee	Va.
Ballard, Donald Eugene B.S. in Ch.E. 1957, University of Arkansas	Ark.
Ballinger, Willis Jerome Ph.B. 1923, Yale University	D.C.
Balser, Donald Raymond A.B. 1955, Indiana University	Ind.
Barber, Frank David A.B. 1954, Mississippi Southern College	Miss.
Barham, Thomas William B.S. 1953, Virginia Polytechnic Institute	Va.
Barksdale, Ronald Stanford B.I.M. 1953, Auburn Community College	Ga.
Bartzoff, Burton B.S. 1955, Boston University	Mass.
Bates, David Barker A.B. 1954, Colgate University	N.Y.
Baugh, Vida Marie A.B. 1950, University of Idaho	Va.
Baum, Edith Carter A.B. 1955, Western Maryland College	Md.
Baumann, Walter Lawrence A.B. 1956, The George Washington University	D.C.
Baxter, Allin Preston A.B. 1952, University of Virginia	D.C.
Bean, David Emerson B.S. 1954, University of Utah	Utah
Beaumont, Charles David III B.S. 1953, University of Wisconsin	Md.
Bechtel, Gene Arlan B.S. 1954, McPherson College	Kans.

Beckwith, Horace Palmer N.J.
A.B. 1954, Maryville College
Beeks, William T., Jr. Wash.
A.B. 1954, University of Washington
Beemer, William Frederick Va.
A.B. 1952, Ursinus College
A.M. 1953, Clark University
Behart, Yvonne Huguette Md.
License es Lettres 1949, University of Bordeaux
Bell, Harry Clark N.Y.
B.S. 1957, Georgetown University
Bell, Thomas Graham Nev.
B.S. in B.A. 1950, University of Nevada
Beller, Margaret Anne Md.
A.B. 1955, A.M. in Ed. 1957, The George Washington University
Beltran, Howard Va.
B.S. in C.E. 1956, Purdue University
Benson, Reed Amussen D.C.
B.S. 1953, Brigham Young University
Benton, Gaylord Nelson Kans.
B.S. 1952, A.M. 1953, University of Kansas
Berdo, Robert Henry D.C.
B.S. 1956, State University of Iowa
Berlage, Bruce Ladd Md.
B.S. 1956, University of Maryland
Bernard, Hugh Yancey, Jr. Va.
A.B. 1941, University of Georgia
B.S. 1947, Columbia University
Bernkopf, Walter Charles Va.
B.S. in E.E. 1949, University of Denver
Bernstein, Alan Herbert Pa.
B.S. in Ch.E. 1955, Drexel Institute of Technology
Bernstein, Saul Henry D.C.
B.S.E. 1957, University of Maryland
Bernstone, Daniel Lazarus N.J.
B.S. 1957, New York University
Berul, Lawrence Herbert N.J.
B.S. 1957, Drexel Institute of Technology
Beter, Peter David W.Va.
A.B. 1947, West Virginia University
LL.B. 1951, National University
Beutler, Ernest Albert, Jr. Wis.
B.S. in M.E. 1956, Northwestern University
Bilger, Donald Earle Va.
B.S. 1951, University of Colorado
J.D. 1954, LL.M. 1955, The George Washington University
Bingman, Samuel David, Jr. Colo.
A.B. 1955, College of Emporia
Bishop, Curtis Lester Va.
B.S. 1955, Virginia Polytechnic Institute
Bisselle, Sara Elisabeth D.C.
A.B. 1933, Radcliffe College
Bitton, Francis Va.
B.S. 1953, Ricks College
Black, John Woodland Md.
A.B. 1947, University of Washington
Blackburn, Charles Byrd Fla.
A.B. 1955, Florida Southern College
Blackwell, Frederick Riley S.C.
LL.B. 1954, University of South Carolina
Bladergroen, Robert John Va.
A.B. 1942, LL.B. 1947, Cornell University
Blaeuer, Channing Davis Mo.
A.B. 1955, The George Washington University
Blanch, Francis John, Jr. Va.
A.B. 1957, The George Washington University
Blatt, Herbert Lawrence D.C.
A.B. 1951, Emory University
LL.B. 1954, St. John's Law School
Blaufarb, Gerard Alan Va.
A.B. 1951, LL.B. 1955, University of Colorado
Blaustein, Paul H. N.Y.
B.S. 1953, Columbia University
Blech, Samuel Herman Md.
B.S. 1950, Brooklyn College
Bloomberg, Marvin Theodore N.Y.
A.B. 1954, Queens College
Bobb, Stanley D.C.
A.B. 1957, University of Maryland
Bodiker, David Henry Ohio
A.B. 1956, Harvard University
Bodolus, Carl Theodore Pa.
A.B. in Govt. 1954, The George Washington University
Boening, Vincent Roland Mich.
A.B. 1945, Oberlin College
Bohan, Jack Lee Va.
B.S. in M.E. 1956, Rensselaer Polytechnic Institute
Bond, Russell Evans Md.
A.B. 1951, Washington Missionary College
Borton, Mark Edward Va.
B.S. 1952, Arizona State College, Tempe
Bosben, Donald Deane Va.
B.S. in C.E. 1950, University of Wisconsin
Boston, Thomas Ray Va.
B.S. 1956, University of Kansas
Bottum, Joseph Henry III S.D.
A.B. 1957, The George Washington University
Boudreau, Alfred Hugh Oliver R.I.
A.B. 1940, Brown University
LL.B. 1949, Boston University
Bourdeaux, Thomas Devane Md.
A.B. 1954, University of Maryland
Bourne, Robert Dulles N.Y.
A.B. 1950, University of Michigan
Bouton, Charles Earhart Md.
B.S. 1952, University of Maryland
Bower, Ferdinand Andrew Pa.
A.B. 1951, Gannon College
Bowler, Eugene Patrick D.C.
B.S. 1937, M.S. 1938, Pennsylvania State University
Boyd, Harvey Stein Pa.
B.S. 1945, U. S. Military Academy
LL.B. 1953, Georgetown University
Boykin, Lester Junod D.C.
A.B. 1946, Duke University
B.S. 1950, U. S. Merchant Marine Academy
Bradley, Robert Benton Mo.
B.S. in E.E. 1956, University of Missouri
Bran, Frances D.C.
A.B. 1956, The George Washington University
Branning, Arthur Livingston Ga.
B.E.E. 1952, Georgia Institute of Technology
Branscomb, Anne Wells D.C.
A.B. 1949, University of North Carolina
A.M. 1951, Radcliffe College

Bratman, Audrey Iris N.Y.
A.B. 1954, Queens College
A.M. 1956, Middlebury College
Bregman, Stanley Irwin Va.
A.B. 1956, The George Washington University
Brekke, Darrell Gene S.D.
B.S. in E.E. 1954, South Dakota School of Mines and Technology
Brennan, Edwin Charles Idaho
A.B. 1953, Idaho State College
Breston, Michael P. Md.
B.S. 1955, University of Maryland
Brewer, Charles Moulton Md.
A.B. 1953, University of Maryland
Brickfield, Cyril Francis N.Y.
LL.B. 1948, Fordham University
LL.M. 1953, The George Washington University
Bridgeforth, Donald Miller Ind.
A.B. 1955, Boston University
Bridgers, Harvey Clifton Pa.
A.B. 1953, Grove City College
Briody, Thomas Allen Va.
B.E.E. 1952, Villanova University
Brock, Lawrence Anthony Md.
A.B. 1950, LL.B. 1953, Western Reserve University
Bronczyk, Arthur Francis D.C.
A.B. 1954, Maryknoll Teachers College
Brooke, Alban Emerson Md.
A.B. 1953, The Citadel
Brophy, Gilbert Thomas Va.
B.S. in B.A. 1949, University of Florida
Brott, Donald Joseph Wis.
B.S. in E.E. 1953, LL.B. 1957, University of Wisconsin
Brown, Ainsworth Howard Md.
A.B. 1955, Gettysburg College
Brown, Charles Erle Md.
B.S. in C.E. 1947, University of Maryland
Brown, George Edwin, Jr. D.C.
A.B. 1947, Harvard University
Brown, Grover Cleveland Del.
A.B. 1957, University of North Carolina
Brown, Theodore Locke Va.
A.B. 1955, Colby College
Brown, William McCormick Md.
A.B. 1956, Duke University
Brown, William Stuart Iowa
B.S. 1945, M.S. 1951, Iowa State College
Bruin, Helen Curley D.C.
A.B. 1955, The George Washington University
Bruno, Mona Constance Md.
A.B. 1950, Trinity College
A.M. 1952, Catholic University of America
Bryer, Richard Harry Va.
B.Ch.E. 1949, Clarkson College of Technology
Bryman, Harold Calif.
B.S. 1951, Wayne University
Brzozowski, Edmund Md.
B.E.E. 1950, The George Washington University
Buchanan, John Dewey, Jr. D.C.
Buckbinder, David R.I.
A.B. 1952, State University of Iowa
Buell, Bruce Temple Colo.
A.B. 1953, Princeton University
Bullock, Joseph Jay Idaho
B.S. 1954, Brigham Young University
Bunz, Claus Heinrich Iowa
B.S. 1957, Iowa State College
Burgess, Harry Charles N.Y.
A.B. 1956, LL.B. 1957, Syracuse University
Burke, Joseph Patrick D.C.
B.S. 1955, Marquette University
Burns, Carl Ray Va.
A.B. 1948, Simpson College, Iowa
A.M. 1949, State University of Iowa
Burns, Edward K. Md.
A.B. 1943, University of Notre Dame
Burrows, Lawton Arthur, Jr. Va.
B.S. in Ch.E. 1957, University of Delaware
Bush, Millard Mundell, Jr. Md.
A.B. 1950, LL.B. 1951, University of Mississippi
Butler, Norton Md.
B.S. 1954, University of Maryland
Buttermark, Robert James Va.
A.B. 1956, Rutgers University
Buttles, Bruce Calif.
A.B. 1930, University of California
M.S. 1936, Columbia University
B.S. 1948, Carnegie Institute of Technology
Byerly, David Stevens Md.
A.B. 1953, University of Virginia
Byrd, John Henry, Jr. Conn.
B.S. 1952, U. S. Coast Guard Academy

C

Cacheris, James Chris D.C.
B.S. 1955, University of Pennsylvania
Caffrey, Charles Augustine Pa.
A.B. 1952, Wilkes College
Cahill, John Joseph Pa.
B.S. 1956, University of Pennsylvania
Cahill, William Charles Va.
B.E.E. 1955, B.M.E. 1956, University of Akron
Cahn, Charles III Md.
B.S. 1954, University of Maryland
Caldwell, Joseph Alton S.C.
B.S. 1949, University of South Carolina
Callaghan, Thomas Francis Pa.
B.S. in I.E. 1957, University of Pittsburgh
Calvert, Andrew McClain Va.
B.S. 1955, Tennessee Polytechnic Institute
Cameron, Howard James Ill.
B.S. in C.E. 1933, Illinois Institute of Technology
Campbell, James, Jr. Va.
B.S. in E.E. 1956, University of Colorado
Campbell, William Goodman Idaho
B.S. 1956, University of Nebraska
Campos, Carlos Rodriquez D.C.
Canady, Donald William Ill.
B.S. in Met.Eng. 1951, Missouri School of Mines and Metallurgy
Canby, Thomas Yellott, Jr. Md.
A.B. 1952, University of Virginia
Cannon, Ross Warren Mont.
A.B. 1951, LL.B. 1957, Montana State University
Cantor, Jay M. Pa.
B.S. 1956, A.B. 1957, University of Pennsylvania

Capps, Anna Joyce A.B. 1957, The George Washington University	D.C.
Carin, Philip B.B.A. 1950, College of the City of New York	N.Y.
Carlisle, Dale Louis B.S. 1957, University of Idaho	Wash.
Carlson, Marcia Ann A.B. 1956, The George Washington University	D.C.
Carmichael, John Leslie, Jr. A.B. 1951, Vanderbilt University A.M. 1956, Columbia University	Ala.
Carney, Helen Ann B.S. 1953, Syracuse University	N.Y.
Carney, John Francis B.S. 1957, Northeastern University	Mass.
Carpenter, William Otis A.B. in Govt. 1950, The George Washington University	Va.
Carr, Eugene Edmund A.B. 1952, University of Utah	Utah
Carter, Albert LeRoy B.S. in A.T.E. 1951, Purdue University	Va.
Cartmell, Mason Strother, Jr. A.B. 1956, University of Maryland	D.C.
Carvellas, Perry B.S. 1952, The George Washington University	Ill.
Cass, Nathan B.E.E. 1952, New York University LL.B. 1956, The George Washington University	Md.
Cassidy, John Robert B.S. in Ind.Eng. 1953, Pennsylvania Military College	Va.
Cassidy, Thomas Kohler B.S. 1953, University of Wyoming	Wyo.
Cathers, Lincoln Drury B.S. 1956, Webb Institute of Technology	N.Y.
Caun, Peter Michael B.S. 1957, University of Pittsburgh	Pa.
Centola, David Daniel B.S. 1949, Fordham University	Md.
Cerick, Peter Aull A.B. 1953, The George Washington University	D.C.
Chamberlain, John A.B. 1951, University of South Carolina	N.Y.
Chamberlain, Milton Kay A.B. 1957, West Virginia University	W.Va.
Champagny, Donald Alcide A.B. 1954, Providence College	R.I.
Chandler, Charles Henry A.B. 1952, University of New Hampshire	N.H.
Chaney, John Lester, Jr. A.B. 1953, The George Washington University	D.C.
Changaris, Christopher Stephen B.S. 1946, U. S. Coast Guard Academy	Fla.
Charlton, Walter Theodore B.S. 1952, University of Maryland	Md.
Chavez, Wenceslon Ross B.B.A. 1949, University of New Mexico	Md.
Cherry, John Claxton, Jr. B.S. 1953, The George Washington University	D.C.
Childress, George Herman B.S. 1952, Oklahoma Agricultural and Mechanical College	Okla.
Childress, Richard Harvey B.S. 1954, U. S. Naval Academy	Ill.
Chilton, Ralph Henry B.S. in M.E. 1952, Purdue University	Ohio
Chin, Gay B.S. in M.E. 1946, Oregon State College	Va.
Choatilekha, Panlop LL.B. 1954, University of Thammasat, Thailand	Thailand
Choon-ngarm, Prasert B.S. 1941, Thai Naval Academy, Thailand LL.B. 1951, University of Thammasat, Thailand	Thailand
Christ, Christ A.B. 1948, A.M. 1953, Middlebury College	N.C.
Christensen, Gerald Leo A.B. 1955, University of Idaho	Idaho
Christenson, Gordon A. B.S. 1955, LL.B. 1956, University of Utah	Va.
Churchill, John Westbrook	D.C.
Cibinic, John, Jr. A.B. 1956, University of Pittsburgh	Va.
Clark, Barry Loomis B.S. in M.E. 1956, Northwestern University	Ill.
Clarke, Malcolm Douglas LL.B. 1955, American University	Va.
Clifton, Noel Samuel B.S. 1952, University of Virginia	Va.
Clinch, William Bogert A.B. 1950, Yale University LL.B. 1957, The George Washington University	Va.
Cobb, Alan Elmer B.S. 1954, Bowling Green State University	D.C.
Cockfield, James Edward B.Pet.Eng., M.S. 1953, Ohio State University	D.C.
Codon, Iryne A.B. 1950, Stanford University	Calif.
Coffman, Edgar Donald A.B. 1953, Western Maryland College	Va.
Cohen, Melvin B.S. in Ch.E. 1948, Virginia Polytechnic Institute	D.C.
Cohen, Meyer A. B.S. 1953, Butler University	Ind.
Cohen, Stanley Howard B.S. 1957, Drexel Institute of Technology	Pa.
Coiner, Julia Edith B.S. 1944, D. C. Teachers College	Md.
Coleman, Beverly Mosby B.S. 1922, U. S. Naval Academy LL.B. 1928, LL.M. 1957, The George Washington University	Va.
Coll, Robert Wilson A.B. 1952, The George Washington University	D.C.
Collins, Charles Richard A.B. 1956, Southwestern State College	Md.
Collins, Robert Terrance B.S. in E.E. 1953, Missouri School of Mines and Metallurgy	Va.
Colson, Charles Wendell A.B. 1953, Brown University	Va.
Connor, Joan Webster A.B. 1955, Kent State University	D.C.
Connor, Paul Phillips B.S. in E.E. 1955, Case Institute of Technology	D.C.
Conrad, Benjamin Franklin B.S. 1947, Dickinson College	Md.

Conroy, Edward Alfred, Jr. D.C.
B.S. 1942, Queens College
M.S. 1943, Ph.D. 1945, Pennsylvania State University
Conway, Neal John Md.
B.S. 1953, Georgetown University
Cook, Albert George III Va.
A.B. 1957, The George Washington University
Cook, George Robert Mich.
A.B. 1956, Hope College
Cook, Howard Lee, Jr. Md.
A.B. 1955, University of Maryland
Cook, Joseph Allen Md.
A.B. 1953, University of Maryland
Cooke, Joseph Allen Pa.
B.S. in C.E. 1957, Drexel Institute of Technology
Cooley, Edwin Remick Kans.
A.B. 1934, Municipal University of Wichita
Cooley, Ray Nelson, Jr. Va.
A.B. 1956, Indiana University
Cooper, Eugene Stephen Va.
B.E.E. 1950, Cornell University
Cooper, George Madison Va.
B.S. 1957, Pennsylvania State University
Cooper, Grover Collins Va.
A.B. 1952, Ohio Wesleyan University
Cooper, Richard Clarence Va.
B.S. in Ch.E. 1956, Michigan College of Mining and Technology
Coplein, Gordon David N.J.
B.S. in E.E. 1956, University of Pennsylvania
Corbin, John Kenneth Va.
B.S. 1954, Wake Forest College
M.S. 1956, Clemson College
Corbus, William Rudolph Calif.
A.B. 1955, Brown University
Corey, Alexander N.Y.
A.B. 1928, Harvard University
Corley, Kelly Ozelle Va.
B.S. 1955, Mississippi College
Cornbrooks, James Ernest D.C.
B.S. 1950, Florida State University
Cornell, Ronald S. N.Y.
B.S. 1956, Queens College
Cortes-Matos, Roberto Puerto Rico
A.B. 1956, Polytechnic Institute of Puerto Rico
Costello, Roger Joseph Va.
A.B. 1948, University of Cincinnati
M.B.A. 1951, Harvard University
Cotter, Thomas Raymond N.Y.
A.B. 1951, St. Bonaventure University
Coulter, George Prothro Md.
A.B. 1951, University of California at Los Angeles
Coulter, Kenneth Brewster D.C.
A.B. 1950, Princeton University
Crabtree, Granville Hayward, Jr. Va.
B.S. 1956, University of Missouri
Crabtree, William H. Tenn.
A.B. 1944, Vanderbilt University
Crady, Clarence William, Jr. Va.
B.S. in P.E. 1949, University of Pittsburgh
Craig, Albert Douglas Price N.Y.
A.B. 1955, Harvard University
Cramer, Moris Michael Pa.
A.B. 1955, Pennsylvania State University
Cranshaw, James Carpenter R.I.
B.S. 1952, University of Rhode Island

Crasanakis, George John Pa.
B.S. 1950, University of Pittsburgh
Craven, John Pinna Md.
B.S. in C.E. 1946, Cornell University
M.S. in C.E. 1947, California Institute of Technology
Ph.D. 1951, State University of Iowa
Crawford, Clayton Eugene W.Va.
A.B. 1937, West Virginia Institute of Technology
A.M. 1949, Marshall College
Crickenberger, Ira Jethro Va.
B.E.E. 1952, The George Washington University
Crisan, George D.C.
Diploma of License at Law 1930, King Ferdinand I University of Cluj
B.D. 1952, Colgate Rochester Divinity School
Critchlow, William James III Utah
A.B. 1955, The George Washington University
Cromartie, William Adrain Va.
B.S. 1942, University of Georgia
LL.B. 1949, St. John's University, New York
Crouch, Hasell Wilkinson Va.
B.M.E. 1955, The George Washington University
Croyle, Carlton Rhule N.Y.
B.M.E. 1956, Clarkson College of Technology
Crump, Edmund Parke D.C.
A.B. 1957, The George Washington University
Crutcher, William Chenault Va.
B.M.E. 1950, Georgia Institute of Technology
LL.B. 1957, University of Louisville
Cullen, David Paul Va.
B.S.E. 1956, M.S.E. 1957, University of Oklahoma
Cullen, Matthew Joseph, Jr. N.H.
A.B. 1946, Harvard University
Cullen, Michael Hawaii
A.B. 1955, The George Washington University
Cullen, Robert Scott Va.
A.B. 1954, Washington and Lee University
Cummings, Lilla Burt D.C.
A.B. 1949, The George Washington University
Curry, Donald Charles N.Y.
A.B. 1952, Hamilton College
A.M. 1954, Johns Hopkins University
Curts, Daniel McClinton Mich.
A.B. 1955, University of Michigan
Cutler, Mitchell Stein Md.
B.S. in B.A. 1955, Georgetown University
Cykowski, Elizabeth Elder Va.
A.B. 1951, Rutgers University
Cykowski, Stanley Va.
A.B. 1946, University of Massachusetts

D

Dailey, Henry Elwood Va.
A.B. 1951, Duke University
Dalton, Martin Kenneth Md.
A.B. 1948, St. Mary's Seminary
Dameron, Roland Meade, Jr. Va.
B.S. in E.E. 1957, Virginia Polytechnic Institute

D'Amico, Louis Joseph Ohio
A.B. 1956, The George Washington University
Daniels, Edward Kent, Jr. Va.
B.S. in M.E. 1955, West Virginia University
Dansker, Martin Samuel Mass.
A.B. 1957, University of Massachusetts
D'Antimo, Daniel N.Y.
B.S. 1948, University of Buffalo
Darling, Joseph Warren Pa.
B.S. 1930, Harvard University
M.B.A. 1934, University of Pennsylvania
LL.B. 1954, The George Washington University
Dauray, Paul Theodore Md.
A.B. 1956, University of Maryland
Davis, Akin Thornwall D.C.
B.Ch.E. 1953, University of Delaware
Davis, Chester Leslie, Jr. Mo.
B.S. in E.E. 1957, University of Missouri
Davis, David Murray D.C.
B.S. 1956, University of Maryland
Davis, Karl Ernst Md.
A.B. 1955, Hampden-Sydney College
Davis, Ulysses D.C.
A.B. 1953, State University of Iowa
Day, Charles Herbert Md.
B.S. 1953, University of Maryland
DeArment, Phillip Leroy Pa.
B.S. in I.E. 1957, University of Pittsburgh
Deaton, Charles Milton Miss.
A.B. 1956, Millsaps College
Deierhoi, Frank Leslie Va.
A.B. 1949, College of William and Mary
de Laski, Donald Va.
A.B. 1954, Duke University
De Lio, Anthony Peter II Va.
B.S. 1953, Polytechnic Institute of Brooklyn
Dellitt, John Philip Va.
B.S. 1950, Iowa State College
Dennison, Donald Lee Va.
B.S. in M.E. 1955, Carnegie Institute of Technology
Dent, Harry Shuler S.C.
A.B. 1951, Presbyterian College
De Paul, Albert Lucius Md.
A.B. 1956, The George Washington University
De Reuil, Louis Joseph Va.
B.B.A., LL.B. 1954, Tulane University
Deschler, Lewis II Md.
B.S. 1953, LL.B. 1955, Washington and Lee University
Desmond, John Joseph III Mass.
A.B. 1955, Harvard University
De Tuncq, Marlon William Mich.
A.B. 1951, University of Michigan
Deuber, Frederick Joe Ohio
B.S. 1953, Ohio State University
De Zell, John Louis Calif.
B.S. 1956, Oregon State College
Diakun, Alan Nicholas D.C.
A.B. 1956, University of Buffalo
Dial, Blackwell Williams Va.
A.B. 1949, University of Wyoming
Diamond, Louis Howard D.C.
A.B. in Govt. 1954, The George Washington University
Diaz, John Andrew Pa.
B.S. 1952, Lehigh University
Dick, Lohr Mitchell Va.
LL.B. 1947, Princeton University

Dickson, Mary Joan N.J.
B.S. in Com. 1953, Rider College
Diegelmann, Marion Faith Md.
A.B. 1955, The George Washington University
Dietrich, Lloyd Eckert Va.
A.B. 1952, Pennsylvania State University
Diuguid, John Powell Md.
A.B. 1954, Virginia Military Institute
Dively, Robert Ray Pa.
A.B. 1957, Pennsylvania State University
Dixon, Harold Anthony N.Y.
B.E.E. 1954, New York University
Doescher, Howard Donald Okla.
B.S. in Ch.E. 1948, Denver University
Doherty, Robert Allan D.C.
B.S. 1950, University of Idaho
Doherty, Robert James, Jr. Mass.
B.S. in Ch.E. 1957, Northeastern University
Donaldson, William Kenneth Va.
B.S. 1956, Yale University
Donato, Dan, Jr. Va.
B.S. 1950, College of Charleston
Donovan, Daniel Gerald Va.
A.B. 1951, Brown University
Doughty, David Lawrence Fla.
A.B. 1954, Mount Union College
Drabek, Jaroslav A. D.C.
A.B. 1953, Washington and Lee University
Drinis, Harry D.C.
A.B. 1955, Texas Western College
Drucker, Teviah S.C.
B.S. 1956, University of South Carolina
Duckworth, Robert Wells Fla.
B.I.E. 1957, University of Florida
Duesterdick, Roy Herman Va.
B.S. 1951, Rutgers University
Duffy, Christopher Ogden D.C.
B.C.E. 1952, Georgia Institute of Technology
Dufresne, Joseph Paul D.C.
B.S. 1943, LL.B. 1948, Georgetown University
Dulyadmamabiromya, Prasan Thailand
LL.B. 1945, University of Thammasat, Thailand
Dunaway, George Baxter D.C.
B.S. 1950, Alabama Polytechnic Institute
Durham, Henry Coleman Ky.
B.S. 1953, University of Kentucky
Duvall, John Hart Va.
A.B. 1955, Principia College
Duvall, John Sprigg IV Md.
A.B. 1951, Princeton University
Dwinell, Davis Blair Pa.
B.S. 1957, Pennsylvania State University
Dybeck, Alfred Charles Va.
A.B. 1955, The George Washington University
Dybrig, Roger Sundal Va.
B.S. 1955, University of Florida

E

Eagle, Helyn Doris W.Va.
A.B. 1957, Georgetown University
Eastwood, Charles Robert Ohio
B.S.E. 1946, B.S. in C.E. 1947, University of Virginia
M.B.A. 1950, Harvard University
Eastwood, Mary Otelia Wis.
B.S. in Ed. 1951, LL.B. 1955, University of Wisconsin

Eberhart, Francis Claude A.B. 1940, University of Dubuque LL.B. 1948, University of Florida	Fla.
Echols, Marion Patton, Jr. B.S. in C.E. 1945, Virginia Military Institute	Va.
Eden, Alan Whitney A.B. 1954, Ohio Wesleyan University	D.C.
Edlavitch, Irwin Paul A.B. in Govt. 1956, The George Washington University	D.C.
Edwards, Howard Lee B.S. 1955, Brigham Young University	Utah
Edwards, Jack Warren B.S. in C.E. 1950, Oregon State College	Oreg.
Eglington, Arthur Richard B.Ch.E. 1953, University of Delaware	D.C.
Ehrhardt, Eugene John B.S. 1955, Georgetown University	Mo.
Elder, Teddy Max B.S. in Ed. 1956, Western Illinois State College	D.C.
Elliott, John Edward A.B. 1957, Waynesburg College	Va.
Elliott, Robert Sydney A.B. 1949, Reed College	Va.
Elson, Quin Samuel A.B. 1956, The George Washington University	Va.
Engebretson, Andrew Peter A.B. 1954, St. Olaf College	Minn.
Engelhard, Sheldon B.S. 1957, Lehigh University	N.Y.
Engelhardt, Thomas Francis A.B. 1950, University of Wisconsin	Va.
Engle, Samuel William B.S. 1953, Pennsylvania State University	Va.
Englert, Alvin John B.S. 1957, Carnegie Institute of Technology	D.C.
Engstrom, Jerald Noel B.S. 1955, University of Utah	Utah
Enockson, Gene Oliver B.S. 1954, Jamestown College	N.D.
Eny, Nicholas Robert B.S. 1948, Pennsylvania State University	Md.
Epstein, William Harvey A.B. 1955; B.S. in Chem.Eng. 1956, Columbia University	N.Y.
Erickson, Roger Wayne B.S. in M.E. 1950, University of California	Va.
Ericson, William Lars B.S. in I.M.E. 1951, University of Michigan	Md.
Eskin, Otho Evans A.B. 1956, Bowdoin College	D.C.
Espy, Billy James B.S. 1951, University of Arkansas	Ark.
Esterlitz, Alvin Morton B.S. in Ch.E. 1954, Drexel Institute of Technology	Pa.
Evans, John Burnison A.B. 1953, University of Virginia	Va.
Evans, Myron Thomas B.S. 1927, U. S. Naval Academy	Ohio
Evans, William George A.B. in Govt. 1954, The George Washington University	D.C.
Everett, Franklin Milton B.S. 1950, The George Washington University	D.C.
Exelbert, Jack Joseph A.B. 1957, American University	N.Y.

F

Fahrney, John William A.B. 1948, LL.B. 1949, The George Washington University	Va.
Fahy, George Herbert A.B. 1954, The George Washington University	D.C.
Faircloth, John William Flood A.B. 1955, Harvard University	Md.
Falk, Julian B.S. 1957, Pennsylvania State University	Pa.
Fallon, George Francis, Jr. B.S. 1956, Boston University	D.C.
Farino, Salvatore Louis A.B. 1953, Duquesne University	Pa.
Farnsworth, William Yates A.B. 1953, Brigham Young University	Va.
Farrell, Thomas George A.B. 1954, Pennsylvania State University	Pa.
Favre, Donavon Lee B.S. 1952, University of Illinois	Ill.
Fay, Elvir Anthony A.B. 1956, Texas Western College	Texas
Fedderson, Ralph Henry A.B. in Govt. 1940, The George Washington University	Va.
Feix, Donald Conrad B.S. in E.M.E 1952, Purdue University	Va.
Felder, Clarice Rose A.B. 1956, The George Washington University	D.C.
Feldman, Edmund Henry A.B. 1954, J.D. 1957, The George Washington University	Md.
Feldman, Frances Bran A.B. 1956, The George Washington University	Md.
Feldmann, John Arthur Fridolin A.B. 1954, Harvard University	Conn.
Fenton, William Francis A.B. 1951, Texas Christian University	D.C.
Ferguson, Richmond Heath A.B. 1953, St. Vincent College	Pa.
Ferretti, James Joseph A.B. 1940, Rider College LL.B. 1956, National University	Conn.
Fessenden, John Stirling A.B. 1952, Dartmouth College	Maine
Fetta, Frank Louis A.B. 1954, Providence College	Va.
Fetterolf, Wallace Kermit A.B. in Govt. 1950, The George Washington University	Va.
Fey, Albert Eugene B.S. in M.E. 1955, University of Michigan	Mich.
Field, Pattie H. A.B. 1923, Radcliffe College A.M. 1951, American University	Colo.
Fields, Gary Dee B.S. 1956, Iowa State College	Ill.
Filcik, Julius Paul B.S. in Ed. 1953, Pennsylvania State Teachers College, Indiana	Va.
Finnegan, Marcus Bartlett B.S. 1949, U. S. Military Academy LL.B. 1955, University of Virginia	N.J.
Fischer, Philip Benjamin A.B. 1956, Adelphi College	Md.
Fishburn, Ralph Tipton A.B. 1948, University of Richmond	Md.
Fisher, Albert Teal A.B. 1956, Hobart College	Pa.

Fitts, Nathan Cheney Md.
A.B. 1939, Amherst College
LL.B. 1948, Harvard University
LL.M. 1956, The George Washington University
Flehr, Paul Harry Calif.
A.B. 1957, San Jose State College
Fletcher, Thomas William Va.
A.B. 1951, College of Wooster
Flick, Robert George Va.
A.B. 1954, Pennsylvania State University
Flood, James Joseph, Jr. N.Y.
A.B. 1953, University of Notre Dame
Flores, Rudolph Alfred Ohio
B.S. 1954, University of Toledo
Flynn, George Joseph, Jr. Md.
E.M. 1939, University of Minnesota
Foelak, Morton N.Y.
B.S. 1953, Brooklyn College
Foldenauer, Robert Carl Va.
A.B. in Govt. 1953, The George Washington University
Foltz, Jack Lloyd Ind.
B.S. in Ch.E. 1957, Rose Polytechnic Institute
Foster, Herman N.Y.
B.C.E. 1950, College of the City of New York
Foster, William George N.J.
B.S. 1948, Drexel Institute of Technology
Fowler, Katharine Swann D.C.
A.B. in Ed. 1933, The George Washington University
M.Mus. 1935, Catholic University of America
Fox, Alvin Benis Va.
A.B. 1956, Duke University
Foy, Allan Bernard Md.
A.B. 1951, University of Maryland
Frame, Clyde Douglas Md.
A.B. 1950, Washington Missionary College
Francois, Francis Bernard Iowa
B.S. 1956, Iowa State College
Frank, Kitty Blair D.C.
A.B. 1943, University of Wisconsin
J.D. 1950, The George Washington University
Franklin, Daniel Tobias D.C.
A.B. 1956, The George Washington University
Franklin, Robert Orr Tenn.
B.S. in E.E. 1957, Vanderbilt University
Frazier, Roy Donald Md.
B.S. in Ch.E. 1950, University of Texas
Freedman, Irving Melvin Mass.
B.S. in E.E. 1954, Northeastern University
Freeh, William Lambert Pa.
B.S. in M.E. 1957, University of Dayton
Freilich, Arthur N.Y.
B.E.E. 1956, Rensselaer Polytechnic Institute
French, James Hoagland, Jr. W.Va.
A.B. 1952, West Virginia University
Fribush, Martin J. N.Y.
A.B. 1952, Hamilton College
Friedman, Antoinette Black N.J.
B.S. 1942, Florida State College for Women
Frost, Robert Lee Va.
B.S. 1955, Louisiana State University
Fryer, William Thomas III Md.
B.S. in E.E. 1955, Lafayette College
Fryrear, James Ralph Md.
B.S. 1954, Linfield College
Fuka, Otto John, Jr. Ill.
B.S. 1954, U. S. Naval Academy
Fuste, Gilberto Puerto Rico
A.B. 1950, University of Puerto Rico

G

Gambino, Robert William Va.
A.B. 1951, University of Virginia
Gandia, Miguel Angel N.Y.
M.B.A. 1953, University of Pennsylvania
Garbow, Melvin Carl Ill.
B.S. 1955, Purdue University
Gardner, Laurence Frederick Va.
A.B. 1957, Dartmouth College
Garretson, William Wendell Iowa
A.B. 1956, Iowa Wesleyan College
Gast, Luverne Leon Va.
B.S. in Ed. 1953, Northern State Teachers College
Gautier, Carmin D.C.
A.B. 1952, M.S. 1955, University of Puerto Rico
Gendelman, Irving D.C.
B.S. in M.E. 1950, University of Buffalo
Gennerick, William Stephen N.Y.
A.B. 1957, Dartmouth College
Georgatsos, Nicholas Chris D.C.
A.B. in Govt. 1956, The George Washington University
Geppert, James Alan Ill.
B.S. in Ch.E. 1955, Northwestern University
Germain, Everett Grant, Jr. Va.
B.S. in E.E. 1953, Virginia Polytechnic Institute
Gheorghiu, Raoul Va.
LL.B. 1932, Bucharest University
LL.D. 1951, University of Paris
Gilbert, Stanley Ormand Md.
Gild, Bernard Pa.
B.B.A. 1957, University of Pittsburgh
Gildenhorn, Herbert Joseph D.C.
A.B. 1956, The George Washington University
Gill, John Francis N.Y.
B.S. 1951, Fordham University
Gill, Marion Sherman Ark.
B.S. 1954, Arkansas Agricultural and Mechanical College
Gingery, C. Arden Calif.
A.B. 1928, University of California at Los Angeles
LL.B. 1931, University of Southern California
LL.M. 1953, Georgetown University
Ginn, John Allen Md.
B.S. 1953, University of Maryland
Gioia, Vincent Gerard Va.
Met.Eng. 1956, Colorado School of Mines
Gladden, William Va.
A.B. 1957, Howard University
Glaser, Darrow Md.
A.B. 1957, University of Maryland
Glenn, Gene Wallace Iowa
A.B. 1950, State University of Iowa
Glenn, Ralph Ray N.C.
A.B. 1947, University of North Carolina
Glickert, Peter D.C.
B.S. in Ed. 1949, Fordham University
Gobetz, Harvey N.Y.
A.B. 1955, Harpur College

Gold, Irwin Lester Md.
B.S. 1949, University of Maryland

Goldberg, Edna Parker D.C.
A.B. 1953, University of Arizona

Goldenberg, Marvin Arthur Md.
A.B. 1951, B.S. in E.E. 1952,
Pennsylvania State University

Golding, Harold Frederick, Jr. Md.
B.S. 1951, University of Richmond

Gonzalez, Pedro Adolfo D.C.
B.S. 1951, The Citadel

Good, Betty Ann Va.
A.B. 1954, University of Florida

Good, George Morton Fla.
A.B. 1951, Emory University

Goodman, John Lee Colo.
A.B. 1953, University of Denver

Gordon, Harvey Jack Md.
B.B.A. 1952, College of the City of
New York
M.P.A. 1956, Harvard University

Gordon, Hugh Lee Va.
B.S. 1952, University of Maryland

Gormley, William Paul Calif.
A.B. 1949, San Jose State College
A.M. 1951, University of Southern
California
Ph.D. 1952, University of Denver
LL.B. 1957, The George Washington
University

Goshorn, Elmer Ellsworth Ill.
B.S. in M.E. 1955, Northwestern
University

Goslee, Eugene George Minn.
A.B. 1949, A.M. 1953, American
International College

Gragan, Philip Arthur D.C.
A.B. 1953, The George Washington
University

Graham, John Goodwin Va.
B.E.E. 1957, University of Virginia

Graniewski, Eugene Bernard Nebr.
B.S. 1957, University of Omaha

Grant, Reina Alice Md.
A.B. 1956, The George Washington
University

Grant, William Arthur N.Y.
B.S. 1948, University of Pennsylvania
A.M. 1949, Columbia University

Graves, Donald William Va.
B.C.E. 1957, Cornell University

Gray, Charles Helman Calif.
B.S. 1943, M.D. 1947, Stanford University

Greenberg, Daniel Sheldon D.C.
A.B. 1953, Columbia University

Greenfield, Russell Roger S.D.
A.B. 1957, Augustana College

Greenhalge, Frederic Md.
A.B. 1945, Harvard University
A.M. in Govt. 1952, The George
Washington University

Greenwood, James Thomas Pa.
B.S. 1954, Pennsylvania State University

Gregerson, Richard Overlie S.D.
B.S. 1957, Augustana College

Greiner, Jerome William Va.
Ph.B. 1951, University of Detroit

Griffin, Benjamin Franklin Va.
B.E.E. 1951, University of Virginia

Griffin, David Wayne N.C.
A.B. 1956, Catawba College

Grimes, Harry Coleman, Jr. Ohio
A.B. 1952, University of Cincinnati

Grinnell, John Robert Va.
B.S. in P.E. 1950, A.M. in Ed. 1951,
The George Washington University

Gross, Marc Stuart N.Y.
B.S. in Ch.E. 1955, Massachusetts
Institute of Technology

Grossman, Phillip Va.
B.S. 1952, New York University

Guerrieri, Harry Joseph Pa.
A.B. 1952, St. Vincent College

Gunod, Seymour David Va.
A.B. in Govt. 1949, The George
Washington University

Guthery, Upton Keller D.C.
A.B. in Govt. 1952, The George
Washington University

Guthrie, Louis Thomas Pa.
A.B. 1951, M.S. 1952, Pennsylvania
State University

Guttman, Robert Michael D.C.
A.B. 1952, Harvard University

H

Hagen, Gordon Holte Minn.
A.B. 1957, St. Olaf College

Hagen, John Holte Minn.
A.B. 1956, St. Olaf College

Hager, Joe William, Jr. W.Va.
B.S. 1956, West Virginia University

Haggart, Ronald D. D.C.
A.B. 1956, The George Washington
University

Hall, Blair Parks Md.
A.B. 1952, University of Maryland

Hall, Briar Lionel Nev.
A.B. 1957, University of Nevada

Hall, Dewey Eugene Ind.
B.S. 1954, Ball State College

Hall, Jack Herbert Va.
B.Ch.E. 1957, Rensselaer Polytechnic
Institute

Hall, James Murdock D.C.
B.B.A. 1954, Wake Forest College

Halleck, Charles White Ind.
A.B. 1951, Williams College

Halow, Mary Md.
A.B. 1956, The George Washington
University

Halstead, Glenn Altman Va.
B.S. in B.A. 1950, University of Arkansas

Hamblen, Johnson Fred Tenn.
B.S. 1947, LL.B. 1949, University of
Tennessee

Hambleton, Neal Del.
A.B. 1956, University of Delaware

Hamill, James John Wis.
B.S. in M.E. 1956, Georgia Institute
of Technology

Hammond, Harlan Young Va.
A.B. 1949, University of Utah

Hamon, William Joseph Va.
B.M.E. 1953, The George Washington
University

Hanagan, Peter Paul N.M.
B.S. 1954, Georgetown University

Handley, Earl Leslie Va.
A.B. 1955, University of Colorado

Hanes, Richard Wayman Va.
B.S. in E.E. 1953, Purdue University

Hansen, Henry N.Y.
B.S. in M.E. 1951, Drexel Institute
of Technology

Haramy, James Shera Ind.
A.B. 1954, DePauw University
Harbison, Earle Harrison, Jr. Va.
A.B. 1948, Washington University
Harder, Paul Richard Va.
B.S. 1957, Rose Polytechnic Institute
Haronian, Howard Richard R.I.
B.S. 1955, University of Rhode Island
Harper, William Risque Ky.
A.B. 1956, The George Washington University
Harris, Patricia Roberts D.C.
A.B. 1945, Howard University
Harris, Sidney N.Y.
B.B.A. 1953, College of the City of New York
Harrison, Allen Edward D.C.
A.B. in Govt. 1955, The George Washington University
Harrison, Allen Hugh, Jr. Va.
A.B. in Govt. 1954, The George Washington University
Harrison, Thomas Emil Md.
B.E. 1954, Johns Hopkins University
Harsh, Richard Stanley D.C.
B.S. 1948, U. S. Military Academy
Hawes, James Edmond D.C.
B.S. in E.E. 1957, University of Illinois
Hayashi, Yoshimi Hawaii
A.B. 1950, University of Hawaii
Hayes, Donald Joseph Conn.
B.E.E. 1953, Cornell University
Hayes, Eldridge Kendall Va.
B.S. 1953, University of Maryland
Hays, James Murtagh D.C.
A.B. 1956, University of Maryland
Hayward, Richard Carlton Md.
A.B. 1954, University of Maryland
Hazzard, John Patrick, Jr. Del.
B.Ch.E. 1956, University of Delaware
Head, Earl Murdock Md.
D.D.M. 1947, University of Louisville
Heaton, William Edmond Ind.
B.S. in M.E. 1942, Purdue University
Hedberg, Shirley Lorraine Bovard Colo.
A.B. 1949, A.M. 1951, University of Denver
Hedrick, Betty Mace Va.
A.B. in Govt. 1952, LL.B. 1955, The George Washington University
Hegle, William Edwin D.C.
B.S. 1949, Georgetown University
Heide, John Paul S.D.
B.S. in E.E. 1957, South Dakota School of Mines and Technology
Heinke, Lowell Lock Va.
B.S.E. 1954, Case Institute of Technology
Helfin, Bernard D.C.
A.B. 1951, Rutgers University
Heller, Milton Md.
B.S. in Phar. 1950, The George Washington University
Helling, Donald Clement Wis.
B.S. 1947, U. S. Military Academy
J.D. 1951, University of Chicago
Henderson, Herbert Hoover W.Va.
B.S. 1953, West Virginia State College
Henderson, Walter D.C.
B.S. 1953, U. S. Military Academy
Hendriksen, Leah Kirstina D.C.
B.S. in Ed. 1932, M.S. 1953, University of Michigan
A.M. 1936, Columbia University

Henry, John Alfred Maine
A.B. 1952, Bowdoin College
Herbert, Thomas Oliver Va.
B.E.E. 1953, Catholic University of America
Hersman, Marion Frank Va.
B.S. 1953, Ohio State University
Ph.D. 1956, University of Illinois
Herz, Robert Richard Nev.
B.S. 1951, Columbia University
Hessenaur, Lloyd Edward Mich.
B.S. in Eng. Law 1955, LL.B. 1957, Wayne University
Hetlage, Robert Owen Mo.
A.B. 1952, LL.B. 1954, Washington University
Higdon, Robert Ainsworth D.C.
A.B. 1955, Randolph-Macon College
Higson, Kenneth James Canada
A.B. 1956, McMaster University, Canada
Hilberg, Frank Clarence Del.
A.B. 1956, University of Virginia
Hilderley, Clifton Tabor, Jr. Mich.
B.S. in C.E. 1952, Michigan College of Mining and Technology
Hill, Betty Rushing Va.
A.B. 1955, The George Washington University
Hill, Warren Dean Ohio
B.S. 1955, Ohio State University
Hillinck, William Charles Calif.
A.B. 1956, University of Southern California
Hillman, Arthur Jerry Wis.
B.S. 1950, LL.B. 1955, University of Wisconsin
Hinsdale, Charles Edwin N.C.
A.B. 1940, University of North Carolina
LL.B. 1946, The George Washington University
Hirai, Seichi Hawaii
A.B. 1950, University of Hawaii
Hitselberger, Joseph Gregory Va.
A.B. 1951, Georgetown University
Ho, Melvin Kwock-Wah Hawaii
A.B. 1954, University of Hawaii
Hobbs, Charles Allen D.C.
A.B. 1950, Yale University
Hocker, Richard Kelly Ariz.
A.B. 1955, University of Arizona
Hoes, Donald Allen Va.
B.S. 1954, University of Cincinnati
Holder, Eugene Loyce Calif.
A.B. 1953, University of California at Los Angeles
A.M. in Pub.Adm. 1956, The George Washington University
Holland, Kenneth Norman D.C.
B.S. 1950, LL.B. 1953, University of Wisconsin
Holmberg, William Harold Okla.
B.S. 1956, University of Oklahoma
Holt, William Harry D.C.
B.S. in Eng. 1957, The George Washington University
Holtzer, James Anthony Pa.
A.B. in Govt. 1957, The George Washington University
Holtzinger, John Edward, Jr. Va.
B.S. 1950, Pennsylvania State University
J.D. 1956, The George Washington University
Honeycutt, Gary Clark Va.
B.S. 1954, University of Arkansas

Hooks, Arnold David Md.
  LL.B. 1955, National University
Hopkins, John Root D.C.
  B.S. in E.E. 1952, Virginia Military Institute
Hornberger, John Edward Md.
  A.B. 1950, M.S. 1951, University of Buffalo
Hostetter, Darwin Robert Pa.
  B.S. 1956, Pennsylvania State University
Hough, Elizabeth Ann N.Y.
  A.B. 1957, Cornell University
Howard, Jay William D.C.
  A.B. 1955, The George Washington University
Howden, Frederick Bingham N.M.
  A.B. 1955, University of New Mexico
Howerton, John Benjamin Va.
  A.B. 1949, Richmond College
  A.M. 1956, University of Richmond
Howson, Hubert Farnham N.Y.
  A.B. 1954, University of Massachusetts
Hughes, Carolyn L. D.C.
  B.S. 1955, Alabama College
Hughes, James Hope Okla.
  B.S. in M.E. 1948, University of Oklahoma
Hughes, Robert Bruce Nebr.
  B.S. 1955, Seattle University
Humphreys, Keith Stratford Wyo.
  B.S. 1955, Brigham Young University
Huntsman, Lawrence Darrow Va.
  B.S. 1956, Pennsylvania State University
Husar, Cornelius Joseph Md.
  B.S. 1956, U. S. Merchant Marine Academy
Hutchison, Alan David N.Y.
  B.S. in B.A. 1956, Ohio State University
Hutson, Donald Lee Mo.
  A.B. 1953, Central College, Mo.
Hyde, Herbert Kenneth, Jr. Okla.
  A.B. 1955, University of Oklahoma
Hyde, Laron DeLos, Jr. Idaho
  A.B. 1954, Brigham Young University
Hyde, Rowland Va.
  B.S. 1951, University of Maryland

I

Ivey, William Thomas, Jr. D.C.
  A.B. 1950, University of South Carolina
Izumi, Francis Masayuki Hawaii
  A.B. 1954, University of Hawaii

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Jabas, Florian Harley Wis.
  B.S. 1957, University of Wisconsin
Jacob, Arthur N.J.
  B.S. 1954, Massachusetts Institute of Technology
Jacobs, Grace Md.
  A.B. 1956, University of Maryland
Jacobs, John Frederick Fla.
  B.S. 1957, Florida State University
Jacobs, Stanley Robert Md.
  A.B. 1953, University of Maryland
Jacobsen, Bernice Harriet D.C.
  Ed.B. 1947, Wisconsin State Teachers College
  A.M. in Govt. 1954, The George Washington University
Jacobson, Richard John N.H.
  A.B. 1952, St. Anselm's College
Jaffe, Tamara Oreg.
  A.B. 1955, Lewis and Clark College
Jager, Elizabeth Rodgers D.C.
  A.B. 1945, Smith College
Jagger, Bruce Anderson Wyo.
  B.S. 1957, University of New Mexico
James, Peter Tenn.
  B.S. 1954, University of Pennsylvania
Jastram, Harold Dudley S.D.
  B.S. 1957, South Dakota State College
Jeffery, Donald Dyer Va.
  B.S. 1957, University of Wisconsin
Jenkins, Donn Keyes Md.
  B.M.E. 1946, University of Virginia
Jennings, Charles Henry Va.
  A.B. 1951, University of Pittsburgh
  M.S. 1952, University of Denver
Jennings, Curtis Arthur Ariz.
  A.B. 1956, University of Arizona
Jennings, Stephen Lester Md.
  A.B. 1955, Clark University
Jennings, Tipton Davis IV Fla.
  B.S. in E.E. 1954, University of Miami
Jennings, Wilbur Ward Utah
  B.S. 1954, Brigham Young University
Jiskra, Beverly Carolyn Leta Ill.
  A.B. 1954, Vassar College
Johansen, Wilford Woodruff Idaho
  A.B. 1951, Idaho State College
Johnson, Arthur Va.
  A.B. 1935, University of Alabama
Johnson, Charles Lloyd, Jr. Md.
  B.S. in E.E. 1952, University of Maryland
Johnson, Daniel Lynn Md.
  A.B. in Govt. 1950, The George Washington University
Johnson, David William N.Y.
  B.S. 1952, Brooklyn College
Johnson, Kenneth Powell Va.
  B.M.E. 1950, Syracuse University
Johnson, Mordecai S.C.
  A.B. 1951, South Carolina State College
Johnson, Robert Alfred Ohio
  B.S. 1950, Ohio State University
  M.S. 1956, Colorado School of Mines
Jones, Charles Sherfy Md.
  B.S. in C.E. 1953, Duke University
Jones, Frank Pierce, Jr. Texas
Jones, Harry Chapman III D.C.
  B.S. 1957, Yale University
Jones, John Norvill Va.
  A.B. in Govt. 1956, The George Washington University
Jones, Phillip Henry Va.
Jones, Royce Earl Va.
  A.B. 1955, Virginia Military Institute
Jones, Thomas Hugh Va.
  B.S. in Ch.E. 1952, Michigan College of Mining and Technology
Jones, Wilson Tolman Md.
  A.B. 1950, University of Utah
Jose, Frank Aldrick Ind.
  B.S. 1952, Indiana University
Joslyn, Danforth Va.
  A.B. 1953, The George Washington University
Journey, Drexel Dahlka D.C.
  B.B.A. 1950, LL.B. 1952, University of Wisconsin
Joyce, James Gerard N.Y.
  B.M.E. 1957, Villanova University
Joyce, Thomas Edward Calif.
  A.B. 1941, LL.B. 1949, A.M. 1950, University of California

Judd, Evan Vernel Utah
B.S. 1956, Brigham Young University
Judson, Robert Russell D.C.
A.B. 1951, A.M. 1955, University of Illinois
Judy, William Raines W.Va.
B.S. in B.A. 1953, Fairmont State College
Juhasz, Andrew Richard Md.
B.S. in M.E. 1949, University of Buffalo

K

Kabes, Vladimir M. Va.
LL.D. 1945, Charles University, Czechoslovakia
Kabrich, Delmar Va.
A.B. in Govt. 1955, The George Washington University
Kahn, Daniel Lyon Fla.
A.B. 1954, University of Miami
Kahn, Douglas Allen N.C.
A.B. 1955, University of North Carolina
Kahn, Elaine Schwartz Va.
A.B. 1947, Indiana University
Kahn, Stuart N.J.
A.B. 1957, Indiana University
Kain, Wallace Mannington Va.
B.S.E. 1951, Princeton University
LL.B. 1956, Harvard University
Kalish, Robert Paul D.C.
A.B. in Govt. 1955, The George Washington University
Kalnins, Karlis Vilis Latvia
Kamel, Ahmed Mohamed D.C.
A.B. 1954, Cairo School of Law, Egypt
Kane, Thomas John N.Y.
A.B. 1949, Cornell University
Kannee, Bruce Neal D.C.
A.B. 1957, The George Washington University
Kaplan, Charles Marvin Tenn.
B.S. 1953, Massachusetts Institute of Technology
Karp, Arnold Lewis Md.
A.B. 1954, University of Maryland
Kast, Darrell Dee W.Va.
A.B. 1954, West Virginia University
Katz, Isadore Bernard Va.
B.S. 1954, University of Maryland
Katz, Martin Howard N.J.
B.S. 1954, Seton Hall University
Kay, Alan Va.
A.B. 1957, The George Washington University
Kaye, Harvey Va.
B.S. in T.E. 1956, Lowell Institute of Technology
Kearney, Edward Francis D.C.
LL.B. 1957, Georgetown University
Keefe, Robert Michael Md.
A.B. 1953, University of Maryland
Keire, Fred Aivars Wash.
B.S. in Ch.E. 1957, University of Washington
Keiser, Clarence Cyrus, Jr. Md.
A.B. 1954, University of the South
Kelly, Anna Brooke Md.
A.B. 1957, Maryville College
Kelly, John Davidson D.C.
A.B. 1953, Carroll College
Kelly, Robert Stanley Calif.
B.S. 1956, Oregon State College
Kemmel, William Anthony, Jr. D.C.
B.S. 1952, M.S. 1953, California Institute of Technology
Kemp, William Franklin Texas
B.B.A. 1954, University of Texas
Kennedy, Joseph Winston Va.
B.S. 1952, McPherson College
Kennington, Charles Robert, Jr. Ohio
B.S. 1949, Kent State University
Kerr, Nelson Reed Md.
A.B. 1955, Shimer College
Kesten, Sanford Miller Mich.
A.B. 1957, University of Michigan
Kiely, JoAnne Marie Conn.
A.B. 1956, Albertus Magnus College
Kiepe, Werner Widtsoe Va.
B.S. 1955, University of Utah
Kigin, John Richard D.C.
A.B. 1957, Indiana State Teachers College
Kilby, H. A., Jr. D.C.
B.S. 1957, Louisiana State University
Kiltz, Gerald Eugene Va.
A.B. 1951, Louisiana Polytechnic Institute
Kim, Houng Han Korea
LL.B. 1949, Seoul National University, Korea
M.C.L. 1954, LL.M. 1955, The George Washington University
Kincaid, Robert Alexander W.Va.
B.S. 1938, Hampden-Sydney College
LL.B. 1954, The George Washington University
King, William Houston Ky.
B.S. in E.E. 1950, University of Kentucky
Kinsella, Richard Conn.
B.S. in F.S. 1955, Georgetown University
Kitmura, Henry Nobuaki Hawaii
B.B.A. 1952, University of Hawaii
Kitsoulis, Michael Thomas D.C.
A.B. in Govt. 1953, The George Washington University
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A.B. 1951, LL.B. 1954, Dickinson College
Kjeldahl, Bill O. Minn.
A.B. 1952, University of Minnesota
Klaas, Bruce Gregory Va.
B.S. in M.E., B.S. in Bus.Mgmt. 1956, University of Colorado
Kleeman, Werner Warren N.Y.
B.S. in M.E. 1956, University of Michigan
Kline, Raymond Adam Pa.
A.B. 1950, Lebanon Valley College
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A.B. 1952, Harvard University
Klooz, Marie Stuart D.C.
A.B. 1923, Sweet Briar College
A.M. 1939, Columbia University
Koffsky, David Neal N.Y.
B.S. in E.E. 1956, Lafayette College
Kohl, Donald Phillip Va.
A.B. 1955, Ohio State University
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B.S. 1957, Michigan State College
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A.B. 1954, University of Hawaii
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Maturitat 1945, University of Zurich, Switzerland
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Kovelman, Gilbert Gerald Va.
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LL.B. 1950, Louisiana State University
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B.S. 1957, University of Pittsburgh
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B.S. in Ch.E. 1948, University of Texas
Kubani, Thomas Leo Mich.
B.M.E. 1954, General Motors Institute
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A.B. 1936, West Virginia University
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Ladimer, Irving N.Y.
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Lahey, John Edmund Md.
B.S. 1953, University of Maryland
Lambrakis, George B. D.C.
A.B. 1952, Princeton University
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Lamphere, George Elwood D.C.
B.S. 1952, Haverford College
B.S. 1954, Massachusetts Institute of Technology
Landberg, Erik Wilgus N.Y.
A.B. 1955, Cornell University
Landefeld, Emil Ernest Md.
B.S. 1951, Ohio State University
Landis, John Lloyd Va.
B.S in Ch.E. 1950, Lawrence Institute of Technology
Landrum, William Wayne Texas
Landry, Walter Joseph La.
B.S. in M.E. 1952, Notre Dame Seminary
Landstrom, Karl Sigurd Va.
A.B. 1930, A.M. 1932, University of Oregon
Lane, Anthony Thomas Va.
B.E.E. 1957, The George Washington University
Lane, Joy Ann Tenn.
A.B. 1956, Union University
Langley, Henry Grady Va.
A.B. 1937, University of Georgia
LL.B. 1940, National University
Lanham, Peter Benedict Ky.
B.S. in M.E. 1957, Rose Polytechnic Institute
LaPrade, John Christian Va.
B.S. 1957, New Mexico College of Agricultural and Mechanical Arts
Larsen, Jack D.C.
A.B. 1942, Princeton University
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LL.B. 1952, The George Washington University
LaRue, Adrian John Va.
B.S. 1956, Virginia Polytechnic Institute

Lawrence, James Wesley Va.
A.B. 1956, Denver University
Leach, Anthony Claude, Jr. La.
B.S. 1956, Louisiana State University
Leary, John Casper Va.
B.S. 1955, Augustana College
Leatherman, Stanley J. Ind.
A.B. 1957, Taylor University
Leavitt, Alfred Lewis Oreg.
B.S. in Ch.E. 1957, Oregon State College
LeBaron, Edward Wayne, Jr. Calif.
A.B. 1950, College of the Pacific
Lee, David Hoy-Chun Hawaii
A.B. 1953, University of Hawaii
Leibowitz, George Joseph Md.
B.S. 1933, College of the City of New York
Leland, Sherman, Jr. Calif.
A.B. 1952, University of California
Lemert, James Edwin Ohio
B.S. in E.E. 1957, Purdue University
Lempio, Paul Standley Mich.
B.S. in M.E., B.S. in Eng.Adm. 1957, Michigan College of Mining and Technology
Leon, Bernard Samuel N.Y.
A.B. 1951, New York University
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B.S. 1948, University of Kansas
M.S. 1952, Kansas State College of Agriculture and Applied Science
Ph.D. 1956, Cornell University
Lepchinsky, Charles Richard Pa.
B.E.E. 1957, The George Washington University
Lesmes, George Franklin N.Y.
B.S. 1955, College of the City of New York
Lestaevel, Pierre Jean Va.
M.E. 1947, National School of Engineering of Lille, France
Levin, Burton Ernest D.C.
A.B. 1959, Duke University
Levine, Harold Va.
B.S. in C.E. 1954, Purdue University
Levine, Herbert D.C.
B.S. 1948, Brooklyn College
Levinson, Daniel Richard D.C.
A.B. 1953, New York University
Levitan, Larry D.C.
B.S. 1955, Washington and Lee University
Levitt, Julian S. D.C.
B.S. 1951, College of the City of New York
M.S. 1953, Kansas State College of Agriculture and Applied Science
Levitzky, Maria D.C.
B.M.L. 1939, University of Tartu
Levy, Earl Va.
B.E.E. 1952, Rensselaer Polytechnic Institute
Levy, Lorraine Marlene Md.
A.B. in Ed. 1957, The George Washington University
Lewis, James Thomas Va.
A.B. 1953, Randolph-Macon College
Lind, Carl John, Jr. Texas
A.B. 1930, B.S. 1931, M.B. 1933, M.D. 1934, University of Minnesota
Lione, Richard Guy Wis.
B.S. 1954, University of Wisconsin
Lipnick, Stanley Melvin D.C.
A.B. 1956, Columbia University
Lipton, Bernard David D.C.
A.B. 1950, LL.B. 1952, New York University

Litman, Malcolm Albert Mo.
B.S. in M.E. 1951, Purdue University
LL.B. 1957, University of Kansas City

Littell, Nelson, Jr. D.C.
B.S. 1941, Pennsylvania State University

Little, Walter Francis Va.
A.B. 1951, Providence College

Livingston, John Frederick, Jr. Ark.
B.S. in B.A. 1955, University of Arkansas

Loedding, James Alfred Va.
B.S. 1953, U. S. Military Academy

Loepp, Marie Therese Iowa
A.B. 1951, State University of Iowa

Loesberg, Carl C. N.J.
A.B. 1956, University of Michigan

Long, Robert Eugene D.C.
A.B. 1953, Indiana University

Longo, Arthur N.Y.
A.B. 1956, Davis and Elkins College

Lonsbury, Thomas Albert Ohio
A.B. 1954, Miami University

Loo, George Wing-Tat Hawaii
B.S. 1952, University of Hawaii

Love, Carl George Va.
A.B. 1950, College of Wooster

Lovett, Lee Gilson Md.
A.B. 1955, Principia College

Lowe, Allan Matthew Md.
B.S. 1956, University of Maryland

Lowenstein, James Gordon Conn.
A.B. 1949, Yale University

Lowrance, George Ercell Tenn.
B.S. 1956, Tennessee Polytechnic Institute

Lucic, Edward Md.
B.S. 1951, University of Maryland

Luckhardt, Philip George N.Y.
B.S. 1956, Columbia University

Lugo, Jose Roberto Puerto Rico
A.B. 1954, University of Puerto Rico

Lynn, James A. Md.
A.B. 1938, A.M. 1939, University of California at Los Angeles

Lyon, Carl Vernon Va.
A.B. 1949, West Virginia Wesleyan
A.M. 1951, American University

M

Maassel, Louis Otto Ohio
B.I.E. 1957, Ohio State University

Machanic, David D.C.
A.B. 1954, University of Vermont

Mackiewicz, John Jacob D.C.
B.S. in Ch.E. 1957, Yale University

MacManus, Elizabeth Joyce Va.
A.B. 1954, Hollins College

MacMichael, Joann N.J.
A.B. 1952, Antioch College

MacMillan, Dalphine Pa.
A.B. 1939, Cornell University

MacNaughton, Marcia Jean Va.
A.B. 1956, Barnard College

MacNeil, Joseph Hector Va.
A.B. 1956, The George Washington University

Madden, Richard Leo Va.
B.S. 1956, Indiana University

Maddox, Betty Rushing D.C.
A.B. 1955, The George Washington University

Maddox, Ronald Paul D.C.
A.B. 1952, Swarthmore College

Madhayomchantr, Kovit Thailand
LL.B. 1948, University of Thammasat, Thailand

Mahassel, Albert Abraham D.C.
B.S. 1952, Worcester Polytechnic Institute

Mahon, Frank May Texas
B.S. 1952, M.S. 1955, North Texas State College

Mahoukian, Milton Nev.
A.B. 1957, University of Nevada

Maidenbaum, Howard Va.
A.B. 1956, New York University

Maier, John Boniface N.Y.
B.S. in Ch.E. 1957, University of Rochester

Main, George Henry Md.
B.S. 1950, U. S. Merchant Marine Academy

Malave, Jorge Luis Puerto Rico
A.B. 1949, Polytechnic Institute of Puerto Rico

Malkin, Eugene Mayer D.C.
A.B. 1952, University of Maryland

Mallios, Dimitri Peter D.C.
A.B. in Govt. 1954, The George Washington University

Malone, Dana Bradford Mass.
A.B. 1938, Harvard University

Maloney, Joseph Patrick D.C.
Ph.B. 1954, University of Notre Dame

Malossi, Leo Italo N.Y.
C.E. 1947, Rensselaer Polytechnic Institute

Maltz, Harry Isaac Va.
A.B. 1956, New York University

Malzeke, Harry Francis N.J.
B.S. 1954, Washington and Lee University

Malzone, Francis Richard Md.
B.S. in Phar. 1953, The George Washington University

Mammarello, William Carmen Del.
A.B. 1950, University of Delaware

Manganaro, Raphael Neri D.C.
B.S. 1925, M.D. 1927, Georgetown University

Manifold, Edward Pa.
A.B. 1957, Duke University

Manning, John Raymond Iowa
B.S. in Eng. 1957, The George Washington University

Manning, Rosemary Christine Mass.
B.S. 1956, University of Massachusetts

Manriquez, Romula Alza Philippines
LL.B. 1952, Far Eastern University, Philippines

Manson, William Everett N.H.
A.B. 1952, University of New Hampshire

Mansur, Jean Va.
B.S. 1946, University of Kansas

Marcosano, Muriel A. N.Y.
A.B. in Govt. 1950, The George Washington University

Marfisi, Philip Michael Nev.
A.B. 1957, University of Nevada

Margolis, Lawrence Stanley Pa.
B.S. in M.E. 1957, Drexel Institute of Technology

Marlow, Charles Austin, Jr. Va.
A.B. 1953, The George Washington University

Marn, Louis Edward Ill.
B.S. in Ch.E. 1952, Illinois Institute of Technology

Marston, Donn Richard N.Y.
A.B. 1956, Harvard University
Martin, Charles Edgar Nebr.
B.S. 1951, U. S. Coast Guard Academy
Martin, Edgar Thomas Va.
B.S. 1938, M.S. 1953, Virginia Polytechnic Institute
Martin, Henry Francis Beaumont D.C.
A.B. 1956, The George Washington University
Martin, Jeffrey Neal Maine
A.B. 1950, University of Maine
Martin, Stephen Briggs Vt.
A.B. 1954, Wesleyan University
Maska, Edwin Chester Mass.
B.S. 1953, University of Pennsylvania
Maslousky, Paul Edward Pa.
B.S. 1956, Pennsylvania State University
Mason, Paul Joseph D.C.
A.B. 1953, Brooklyn College
A.M. 1954, Harvard University
Masterson, James Edwin Ky.
B.S. 1952, Berea College
LL.B. 1956, The George Washington University
Mathur, Erica Laufer N.Y.
A.B. 1954, The George Washington University
Matteucci, Albert Nev.
A.B. 1952, University of Nevada
Matthews, Samuel Sheridan Va.
B.S. 1955, The George Washington University
Matthews, William Alexander Pa.
A.B. in Govt. 1956, The George Washington University
Mautz, George Francis Pa.
B.C.E. 1957, Villanova University
May, Edgar Burton D.C.
A.B. 1952, A.M. 1953, University of Buffalo
Mayberry, Grant Elmer D.C.
A.B. in Govt. 1954, The George Washington University
Mayer, Jacob William Ky.
B.S. 1954, LL.B. 1957, University of Kentucky
McAuliffe, Francis Adam Md.
B.S. 1957, University of Maryland
McCabe, John D. N.Y.
A.B. in Govt. 1947, LL.B. 1955, The George Washington University
McCallum, Millard R. D.C.
A.B. 1949, University of Mississippi
McCandlish, Harrison Eugene Va.
B.M.E. 1952, Polytechnic Institute of Brooklyn
McCarty, Everett William Ill.
B.S. 1956, Bradley University
McConchie, Harold Winfield, Jr. Va.
A.B. 1955, Roanoke College
McCorkle, Mary Ellen Va.
A.B. 1946, The George Washington University
McDaniel, Marlin K. Ind.
B.S. 1954, Purdue University
McDermott, Edwin Floyd Ohio
A.B. 1957, Denison University
McDonald, Malcolm Theodore Va.
A.B. 1952, University of North Carolina
McDonald, Ronald Fisher, Jr. Md.
A.B. 1955, University of Maryland
McDowell, William Woods, Jr. D.C.
B.E. 1953, Johns Hopkins University

McElroy, William Lewis Ala.
A.B. 1940, LL.B. 1942, University of Alabama
McEniry, Mary Alice Va.
B.S. 1942, University of Alabama
McFeely, Blake Hopper Md.
A.B. 1948, Yale University
McGregor, Wallace Hulley D.C.
A.B. 1953, University of Florida
McIntosh, David Foreman Pa.
B.S. 1952, U. S. Coast Guard Academy
McKamey, William Md.
B.S. 1953, East Tennessee State College
McKechnie, Douglas R. N.Y.
B.M.E. 1953, Rensselaer Polytechnic Institute
McKeever, James Joseph N.Y.
B.S. 1950, Fordham University
McLaughlin, Edward Daniel Va.
B.S. 1925, U. S. Military Academy
McNamara, Thomas Neal Va.
A.B. 1952, Duke University
McNealy, Gibbon Elliott N.C.
B.S. 1950, University of North Carolina
McNenny, James Hunter Ohio
A.B. 1956, Miami University
McNulty, Paul Edmund Va.
A.B. 1952, The George Washington University
Means, Cecil Paul Nebr.
A.B. 1957, University of Nebraska
Means, Edward Douglas, Jr. D.C.
A.B. 1953, Duke University
Mecham, Leonidas Ralph Md.
B.S. 1951, University of Utah
Medeiros, Thomas E. Mass.
B.B.A. 1955, University of Miami
Medley, Martin Luke, Jr. Tenn.
Megley, Richard Burns Mass.
B.S. in M.E. 1957, Rensselaer Polytechnic Institute
Mehr, Milton Samuel D.C.
B.C.E. 1951, Rensselaer Polytechnic Institute
Mellado, Ramon Antonio Puerto Rico
A.B. 1955, University of Puerto Rico
Meller, Michael Nicholas Va.
B.Ch.E. 1951, Pratt Institute
Melton, Charles Alan Okla.
A.B. 1955, University of Oklahoma
Mencher, Bruce Stephan D.C.
A.B. in Govt. 1957, The George Washington University
Meriam, Anne Whitfield Md.
A.B. 1956, The George Washington University
Mesirow, Harold Esiah Md.
A.B. 1954, The George Washington University
Metheny, Delmar D. Kans.
B.S. 1956, Fort Hays State College, Kans.
Mich, Alex, Jr. D.C.
B.S. in Ch.E., B.E. in Met.E. 1949, University of Michigan
Millard, James Judson Va.
B.S. 1953, Georgetown University
Millen, Irwin William Va.
B.S. 1950, Massachusetts Institute of Technology
Miller, Malcolm Drennan Va.
A.B. 1931, Grinnell College
LL.B. 1935, Georgetown University
Miller, Robert Jay D.C.
B.S. 1957, Pennsylvania State University

Miller, Roy D.C.
B.S. in M.E. 1956, University of Washington
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A.B. 1951, Pennsylvania State University
LL.B. 1956, The George Washington University
Miller, William Charles Md.
A.B. 1953, University of Maryland
Milliken, John Rowe N.C.
A.B. 1953, University of North Carolina
Milliken, Rankin Allen Va.
B.S. in E.E. 1950, Northeastern University
Miner, Charles Edward, Jr. Fla.
B.S. 1955, Florida State University
Mion, John Henry Va.
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Mitchell, Charles Reese Ala.
B.S. 1951, University of Alabama
Mitchell, Jerry Warren Wash.
B.S. 1951, U. S. Merchant Marine Academy
Mitchell, Roy Shaw N.Y.
B.S. 1957, Cornell University
Miyares, Marcelino Sotolongo Cuba
Bachillerato 1955, University of Villanueva, Cuba
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A.B. 1954, Nebraska Wesleyan College
Moliski, Robert John Va.
B.S. 1950, Syracuse University
Monday, William Waldrop Ala.
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Montgomery, Robert Hayes D.C.
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A.B. 1950, University of Florida
Mooney, William Charles, Jr. Conn.
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Moore, David Lewis N.Y.
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LL.B. 1952, A.M. 1955, The George Washington University
Moore, Gerald Lee Md.
B.S. 1953, Rose Polytechnic Institute
Moore, Harold Thomas Tenn.
B.J. 1951, University of Missouri
Moore, John Curtis Texas
A.B. 1954, University of Texas
Moore, Raphael Barry Nebr.
B.S. 1953, University of Nebraska
Moore, Richard Ernest Ohio
B.M.E. 1957, University of Dayton
Moore, Rodger Meek Utah
B.S. 1952, LL.B. 1956, University of Utah
Morgan, Richard Linn W.Va.
B.S. in Ed. 1952, West Virginia University
Moriarty, Patrick J. Minn.
A.B. 1950, American International College
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Moriarty, Paul Maurice Mass.
A.B. 1942, Columbia University
Morin, Armand Girard Md.
B.S. 1939, University of New Hampshire
Moring, John Frederick Va.
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Morris, John Charles N.C.
B.M.E. 1952, North Carolina State College of Agriculture and Engineering
Morris, John Michael Pa.
A.B. 1956, Indiana University
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A.B. 1949, Agnes Scott College
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A.B. 1955, Principia College
Morse, Wayne Allen, Jr. Va.
B.S. in B.A. 1948, University of Kansas
B.S. in Ed. 1949, Kansas State Teachers College, Emporia
Moscatello, Anthony Carmen Pa.
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A.B. 1957, Brigham Young University
Mossinghoff, Gerald Joseph D.C.
B.S. in E.E. 1957, St. Louis University
Motsko, Donald Russell Pa.
B.S. 1957, Pennsylvania State University
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B.S.E. 1950, University of Connecticut
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A.B. 1949, University of South Dakota
Moyer, William Bishop Pa.
B.S. 1956, Pennsylvania State University
Mueller, Richard Paul S.C.
B.S. 1954, Muskingum College
Muhlenberg, David Stoddard D.C.
A.B. 1951, Williams College
B.S. in M.E. 1952, Massachusetts Institute of Technology
Mulholland, John Herbert Ill.
B.S. 1957, University of Illinois
Mullally, John Joseph Md.
B.S. 1953, Georgetown University
Mullins, George Gordon Va.
A.B. 1945, Hamline University
Munro, Sanford Sterling, Jr. Wash.
A.B. 1957, The George Washington University
Munter, Theodore Albert D.C.
A.B. 1954, Bucknell University
Murray, James Glick Md.
B.S. in M.E. 1948, University of Maryland
M.S. in M.E. 1952, University of Washington
B.E.E. 1956, The George Washington University
Murray, Jeremiah Gerard N.J.
B.S. 1957, Newark College of Engineering
Murray, Joseph Va.
B.S. 1949, University of Richmond
Musumeci, Alfred Vincent N.Y.
B.M.E. 1956, Rensselaer Polytechnic Institute
Myers, John Faris Md.
A.B. 1954, University of Maryland
Myhre, Charles Jerome N.D.
B.S. 1957, North Dakota State Teachers College
Myles, Vale Patrick D.C.
B.S. in E.E. 1953, University of Nevada

N

Naftalin, Micah Harry D.C.
A.B. 1955, Brandeis University
Nash, Ralph Clarke, Jr. Pa.
A.B. 1953, Princeton University

Nathanson, James Elzar A.B. 1954, Harvard University	Mass.
Naylor, Stephen Paul A.B. 1951, Siena College	N.Y.
Neal, Philip Stanley A.B. 1954, University of Colorado	Va.
Neal, William Albert A.B. 1956, University of Maryland	Md.
Neilan, George Joseph B.E. 1957, Yale University	N.J.
Neimark, Sheridan Lew B.S. in Ch.E. 1957, Carnegie Institute of Technology	Ohio
Neimo, Peter James B.S. 1922, U. S. Naval Academy M.S. 1930, Harvard University	Va.
Nelson, Daniel Emmet B.S. 1953, University of Utah	D.C.
Nelson, Edward Holder B.S. 1956, University of North Carolina	D.C.
Nelson, John Trescott A.B. 1954, Harvard University	Md.
Nelson, Julia Ney A.B. 1944, University of California	Va.
Nelson, Robert Edward, Jr. A.B. 1955, Youngstown University	Ohio
Nelson, Thomas Freeman B.S. in Ch.E. 1956, Lafayette College	Pa.
Neumann, Ottmar Antonius B.S. in Gph.Eng. 1953, St. Louis University	Va.
Newbould, Edmond John B.S. 1940, U. S. Naval Academy	Va.
Newman, Clinton Irwin A.B. 1951, Pennsylvania State University	Va.
Newton, James Dallas A.B. 1947, Hamilton College	Md.
Nichol, L. Dow III B.S. in C.E. 1953, University of Illinois	Ill.
Nicoletopoulos, Pana Giotis LL.B. 1955, University of Athens, Greece	Greece
Niles, Theodore Lyman A.B. 1941, Yale University A.M. 1948, Columbia University	N.Y.
Nilson, Robert Gordon B.S. 1957, Virginia Polytechnic Institute	D.C.
Nitta, Henry Masao A.B. 1953, University of Hawaii	Hawaii
Nordstrom, John Romeo A.B. 1949, Minnesota State Teachers College, Moorhead	N.D.
Norris, Robert Brewer A.B. 1955, University of Virginia	D.C.
Noyes, Henry Joseph B.S. 1951, University of Maryland	Md.
Noyes, John Zabriskie A.B. 1952, University of Washington	N.Y.
Nunzio, Nicholas Stephen A.B. in Govt. 1957, The George Washington University	D.C.
Nypaver, Edward William B.S. in C.E. 1957, University of Pittsburgh	Pa.

O

Oberhauser, Louis B. II B.S. in C.E. 1956, Iowa State College	Iowa
Oberlin, Phillip Spayde B.S. in Met.E. 1955, Purdue University	Va.
O'Briant, Robert Earl B.S. 1955, University of Maryland	Va.
O'Brien, James David B.S. 1953, Georgetown University	Mass.
O'Connell, Edward Joseph A.B. 1952, Northeastern University	Va.
O'Connor, John Thomas A.B. 1957, University of Maryland	Va.
O'Connor, Richard Leo A.B. in Govt. 1951, The George Washington University	Calif.
Oder, Lyle Deane B.S. 1944, U. S. Naval Academy M.S. 1953, University of California at Los Angeles	Md.
Odin, Dexter Stetson B.S. 1956, University of Florida	Ky.
O'Guin, Sydney Lamar B.S. 1937, University of Tennessee	Va.
Oldham, James Simpson A.B. 1950, Centre College	Ky.
Olexa, Donald Steen B.S. 1956, Pennsylvania State University	Va.
Olexo, George Robert A.B. 1950, University of Bridgeport A.M. 1955, New York University	Va.
Oleyar, George Louis B.S. 1951, Georgetown University	Va.
Olsen, Dennis M. B.S. 1951, Brigham Young University	D.C.
Olson, Robert Leo B.S. in Eng. 1956, South Dakota School of Mines and Technology	Va.
Opdyke, Robert Dale A.B. 1957, Western Michigan College of Education	Md.
O'Reilly, Hugh Thomas B.S. 1954, Georgetown University	D.C.
Osborne, Heber Burton, Jr. A.B. 1954, Duke University	D.C.
Ostrow, Norman A.B. 1956, Adelphi College	Md.
O'Toole, Ursula Elizabeth B.S. 1954, Loyola University, Illinois	Mich.
Ottman, Millard Frederick, Jr. A.B. 1956, Johns Hopkins University	Va.
Owens, Arthur Lee A.B. 1956, University of Georgia	Va.

P

Painter, Robert Kessler B.S. 1953, University of Illinois	Va.
Palamara, Edward Anthony A.B. 1951, University of Maryland	Md.
Palau, Alejandro B.S. 1955, University of Maryland	Md.
Palladino, Mary Ax A.B. 1930, Lebanon Valley College A.M. 1933, Pennsylvania State University	D.C.
Pallansch, Margaret Mary A.B. 1940, Trinity College LL.B. 1953, The George Washington University	D.C.
Palmer, Arthur Irving, Jr. B.E. 1949, Yale University M.S. 1956, University of Virginia	Va.
Pantos, George John A.B. 1952, Syracuse University	Mass.
Panzitta, Frank Ralph A.B. 1957, The George Washington University	N.J.
Panzitta, Joseph A.B. 1955, The George Washington University	N.J.
Papaiodanu, John Nicholas A.B. 1955, University of Delaware	Del.

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Licenciado en Derecho 1942, University of Barcelona, Spain
Park, Chyun Shik Korea
LL.B. 1955, Seoul National University, Korea
Parker, Gayle Va.
B.S. in Ind.Eng. 1956, Lafayette College
Parris, Stanford Elmer Va.
B.S. 1950, University of Illinois
Pastore, Joseph James, Jr. Md.
B.S. 1952, New York State Maritime College
Paul, Alan Gilbert Va.
B.M.E. 1956, Rensselaer Institute of Technology
Pavlick, Walter Eugene Va.
B.S. 1956, Case Institute of Technology
Pawlick, John Edward D.C.
B.S. 1952, University of New Hampshire
Payne, Albert Alford Texas
A.B. 1942, The George Washington University
Payne, Richard Ernest Va.
A.B. 1957, Lynchburg College
Pecore, Joe Lewis Oreg.
A.B. 1948, University of Washington
Pedas, Theodore Pa.
B.S. in B.A. 1953, Youngstown College
M.B.A. 1954, University of Pennsylvania
Peery, Kenneth Edward Va.
A.B. 1947, Kansas State Teachers College, Emporia
LL.B. 1950, University of Kansas
Peltin, Sherwin Carl Va.
B.B.A. 1950, LL.B. 1952, University of Wisconsin
LL.M. 1955, New York University
Perkins, Julie Rate Md.
A.B. 1957, Cornell University
Perko, Robert R. Va.
B.S. 1950, Georgetown University
Perry, Owen Errett Va.
B.C.E. 1953, Georgia Institute of Technology
Perry, Stanley Durward Okla.
A.B. 1955, The George Washington University
Perry, William Dial D.C.
A.B. 1953, Princeton University
Peter, Robert Gates Texas
B.S. in M.E. 1948, University of Texas
Peterson, Thomas Lee Va.
B.S. 1956, Stanford University
Petko, Edward Andrew Va.
B.S. 1950, University of Illinois
Petrusek, Robert Allen Wis.
B.S. in Met.Eng. 1954, University of Wisconsin
Petsko, John Va.
A.B. in Govt. 1949, The George Washington University
M.S. 1950, Columbia University
Pfeiffer, Harry Fletcher, Jr. Va.
A.B. 1945, St. John's College, Md.
Pfeiffer, Richard McFarland Pa.
A.B. 1949, University of Pittsburgh
Phillips, Jack Ewart N.C.
A.B. 1955, University of North Carolina
Phillips, Joe Weldon Ark.
B.S. 1956, Arkansas State Teachers College
Phillips, Leonard Bradwell Iowa
A.B. 1951, Yale University

Phillips, Thomas Madison Ga.
B.E.E. 1952, Georgia Institute of Technology
Pickens, John Kenneth Va.
LL.B. 1942, Harvard University
LL.M. 1949, The George Washington University
Pinsker, Robert David N.J.
B.S. 1951, Columbia University
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B.S. 1936, College of the City of New York
A.M. 1938, Columbia University
Pledger, Reginald Harrison, Jr. Va.
A.B. 1955, Duke University
Plummer, Edgar Eugene Va.
A.B. 1955, Westmont College
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B.I.E. 1957, Ohio State University
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Doctor of Law 1938, Masaryk University, Czechoslslovakia
Pollack, Morris Irwin Va.
B.S. in M.E. 1954, Newark College of Engineering
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B.Mar.Eng. 1951, New York State Maritime College
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B.S. in Eng. 1957, The George Washington University
Potter, Robert Joseph Nev.
A.B. 1954, University of Nevada
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A.B. 1930, University of Washington
Powers, George Richard Ill.
B.S. 1957, University of Illinois
Presson, Jerry Mayronne D.C.
B.I.E. 1952, New York University
Preston, Herbert N.Y.
A.B. 1947, Cornell University
Prichard, Donald Lee Va.
A.B. in Govt. 1957, The George Washington University
Priest, Lyman William D.C.
A.B. 1946, University of Arkansas
A.M. 1947, Ph.D. 1954, Stanford University
Prigmore, William Bible Md.
B.S. 1943, U. S. Naval Academy
Primack, Jason Carl Mass.
A.B. 1954, Tufts University
Pritchett, Daniel Medford III D.C.
B.S. 1949, Morgan State College
Proctor, Donald Garfield Va.
B.S. 1953, University of Florida
Provost, Nancy Lou Conn.
A.B. 1956, Brown University
Pruden, Kenneth Elmer Md.
B.S. 1951, U. S. Naval Academy
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B.S. in Ch E. 1951, Washington University

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B.S. 1956, South Dakota School of Mines and Technology

Putnam, Earle Westgate Vt.
A.B. 1950, Dartmouth College

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B.S. 1951, St. Mary College

Pyles, Warren Stewart Pa.
B.S. in E.E. 1957, Carnegie Institute of Technology

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LL.B. 1947, Arellano University, Philippines
Ph.B. 1952, University of San Francisco

Query, Anthony Lothrop Mass.
A.B. 1957, The George Washington University

Quick, George Ryan Md.
B.S. 1950, University of Maryland

Quist, Raymond Hugo Va.
B.S. 1957, Newark College of Engineering

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Rabkin, Richard Manford Va.
B.E.E. 1950, Cornell University

Ragan, Richard John Ohio
A.B. 1951, Ohio University

Raizes, Sheldon Foster N.M.
B.S. in C.E. 1957, University of New Mexico

Randa, John Charles Wis.
B.S. in E.E. 1957, Marquette University

Rasmussen, Paul Christian Mich.
A.B. 1948, LL.B. 1951, University of Michigan

Ratliff, Hubert Smith Texas
B.B.A. 1955, University of Texas

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B.S. in Met.Eng. 1954, Michigan College of Mining and Technology

Rawicz, Leonard D.C.
B.S. 1953, University of Connecticut

Raymond, Richard Lee Va.
A.B. 1951, Swarthmore College
M.S. 1956, Indiana University

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Doctor of Laws, 1948, University of Paris

Ready, Dudley Thurston D.C.
A.B. 1954, Norwich University

Rector, Alfred Rozier Md.
LL.B. 1952, American University
A.B. in Govt. 1955, The George Washington University

Redmon, Robert Raymond D.C.
B.S. in I.E. 1955, University of Michigan

Reed, Lowell A., Jr. Wis.
B.B.A. 1952, University of Wisconsin

Reeser, Ralph Raymond D.C.
A.B. 1955, University of Washington

Reich, Marvin Md.
B.S. 1953, Polytechnic Institute of Brooklyn

Reilly, James Donald N.J.
B.S. 1954, Franklin and Marshall College

Reisner, Ralph Wash.
A.B. 1957, University of Washington

Rempe, James Henry Md.
A.B. 1956, The George Washington University

Renner, Arnold Edward Va.
B.S. in E.E. 1954, Purdue University

Renstrom, Darrell George Utah
B.S. 1955, University of Utah

Reynolds, William Carter Pa.
B.S. 1957, Swarthmore College

Rhodes, Revis Gale, Jr. Texas
B.S. 1954, Texas Technological College

Rice, Albert Watson D.C.
B.S. 1934, Davidson College

Richards, Gerald Francis, Jr. N.Y.
B.B.A. 1956, Niagara University

Richards, Suzanne Virginia D.C.
A.B. 1948, The George Washington University

Ridgeway, James Earl, Jr. Idaho
A.B. 1957, Northwest Nazarene College

Riggins, Wayland Henry Va.
B.S. 1956, Clemson Agricultural College

Riismandel, Vaino John Md.
Diploma in Law 1942, University of Tartu, Estonia
LL.M. 1943, Dr.Rer.Pol. 1945, University of Jena, Germany
M.C.L. (Am. Prac.) 1956, The George Washington University

Ring, Carl Ewald Va.
B.S. 1950, Madison College

Riseng, Ole Arne Jerome D.C.
B.S. in M.E. 1955, M.S. in M.E. 1956, University of Michigan

Ritz, Marie Magdalen Pa.
A.B. 1957, The George Washington University

Roark, Mary Trufant Va.
A.B. 1945, Tulane University

Robbins, David N.Y.
B.E.E. 1950, College of the City of New York

Robbins, Louis Peters D.C.
A.B. 1951, The George Washington University
LL.B. 1954, Harvard University

Roberts, Charles Franklin Wash.
A.B. 1957, State College of Washington

Roberts, Evan Dale Va.
B.S. 1953, University of Illinois

Roberts, Howard Stowe Fla.
B.S. in M.E. 1935, Purdue University

Robertson, James Colvert D.C.
B.S. 1957, University of Maryland

Robey, Paul Andson, Jr. Va.
B.E.E. 1956, The George Washington University

Robinson, Charles Augustus, Jr. Va.
B.E.E. 1950, University of Virginia

Robinson, Robert Henry Pa.
B.S. in Ch.E. 1956, Lehigh University

Robinson, Roscoe Simmon Miss.
A.B. 1956, American University

Rockwell, Marion Arden Pa.
B.S. 1949, M.Litt. 1950, University of Pittsburgh

Rodgers, John Edward Va.
LL.B. 1949, Vanderbilt University

Rodgers, John Ferguson Ky.
A.B. 1956, University of Louisville

Rogers, John Torrey Mo.
B.S. in M.E. 1956, University of Colorado

Rogers, Kenneth Norman N.Y.
B.S. 1953, Ohio State University

Rohall, Donald Earl Pa.
A.B. 1956, University of Pittsburgh

Rolinec, Rudolph Valentin Md.
B.S. in E.E. 1949, University of Pittsburgh
Romano, James Joseph, Jr. N.J.
M.E. 1956, Stevens Institute of Technology
Romanovski, Genevieve D.C.
A.B. 1937, University of New Hampshire
Roohan, James Francis, Jr. N.Y.
A.B. 1942, Michigan State College
Rose, Shep Kalman La.
B.S. in Phar. 1955, University of Georgia
Rosen, Gerald Stuart Md.
B.S. 1950, Michigan State College
Rosen, Hyman Md.
A.B. 1944, A.M. 1945, Columbia University
Rosen, Marvin H. Md.
B.S. 1951, Pennsylvania State Teachers College, Kutztown
Rosen, Sam Md.
B.S. in Phar. 1950, The George Washington University
Rosenberg, Hyman Louis D.C.
A.B. in Govt. 1956, The George Washington University
Rosenblum, Jerald Edwin Va.
B.S. 1956, Washington University
Rosenstein, Joel Bruce D.C.
B.S. 1957, University of Maryland
Rosenthal, Robert J. Md.
A.B. 1937, University of North Carolina
A.M. 1947, American University
Ross, Emily May D.C.
A.B. 1956, Mount Holyoke College
Ross, Leo D.C.
B.M.E. 1928, Northeastern University
LL.B. 1932, The George Washington University
Ross, William R. Wyo.
Rotert, Warren Herbert Va.
B.S. in I.E. 1952, Lafayette College
Roth, Richard Lee Md.
A.B. 1954, University of Michigan
Rothrock, Thomas Jefferson Va.
B.S. 1955, University of Maryland
Rothstein, Seymour Ohio
B.S. in M.E. 1952, Case Institute of Technology
Rowlands, Howard Pa.
A.B. 1956, Pennsylvania State University
Roy, Raymond Lionel Maine
A.B. 1953, Colby College
Roybal, Ben Frank N.M.
A.B. 1956, New Mexico Highlands University
Rozar, Morris N.C.
B.B.A. 1956, Wake Forest College
Ruark, Eugene Henry, Jr. Md.
B.S. 1950, Yale University
LL.B. 1956, The George Washington University
Rubin, Lonnie Bruce Md.
B.S. 1954, University of Maryland
Rudman, Paul Lewis Maine
A.B. 1957, Yale University
Ruppert, Thomas Otto, Jr. Va.
A.B. in Govt. 1957, The George Washington University
Russell, Carlton Eugene Calif.
B.S. 1952, U. S. Coast Guard Academy
Russell, James Miller D.C.
A.B. in Govt. 1949, The George Washington University
Russell, John Bruce Md.
A.B. 1955, The George Washington University
Russell, John Frank Md.
Ryder, Loretta Pauline D.C.
B.S. 1941, Emmanuel Missionary College
M.S. in S.W. 1944, Catholic University of America
Rykhus, Douglas Joseph Md.
A.B. in Govt. 1951, The George Washington University

S

Sacks, Stanley Md.
B.S. 1954, Queens College
Sadler, Frederick T. Va.
B.S. 1944, California Institute of Technology
J.D. 1957, The George Washington University
Saile, George Oscar Ohio
Ch.E. 1953, University of Cincinnati
Sala, Frank Joseph, Jr. Nev.
B.S. in B.A. 1952, University of Nevada
Salem, Irving D.C.
A.B. in Govt. 1957, The George Washington University
Salins, Donald Jack D.C.
B.S. 1954, D. C. Teachers College
Salzberg, Karl Irvin Va.
B.S. 1952, Cornell University
Sandeen, Charles Edward Va.
A.B. in Govt. 1953, The George Washington University
Sanders, Roger Edward Ind.
A.B. 1951, Indiana University
A.M. 1957, Georgetown University
Sansalone, Victor Joseph Md.
A.B. 1956, Marietta College
Saraniero, Gioconda Rita D.C.
B.S. 1931, New York University
M.D. 1935, Woman's Medical College of Pennsylvania
Saul, Howell Jay N.Y.
A.B. 1953, The George Washington University
Savage, Arthur Paul Va.
B.S. in Eng. 1956, The George Washington University
Saxe, Jon Sheldon N.Y.
B.S. in Ch.E. 1957, Carnegie Institute of Technology
Schachner, Julian Ariz.
B.S. in M.E. 1952, University of Arizona
Schaper, Donald Dale Kans.
B.S. 1954, Kansas State College of Agriculture and Applied Science
Schellenger, Marshall Leeds D.C.
A.B. in Ed. 1957, The George Washington University
Schiller, Arthur Michael Ill.
A.B. 1953, University of Illinois
Schiller, Thomas Paul Ohio
B.S. 1956, Case Institute of Technology
Schmid, Otto, Jr. Tenn.
B.E.E. 1953, Georgia Institute of Technology
Schmidt, George Andrew N.Y.
B.M.E. 1956, Rensselaer Polytechnic Institute
Schmidt, Manfred J. Md.
A.B. 1951, Roosevelt University

Schmidt, Richard Huestis	A.B. 1954, Middlebury College	Vt.
Schmidt, Robert Milton	B.B.A. 1951, M.B.A., LL.B. 1954, University of Michigan	Mich.
Schmitt, Frederick Joseph III	A.B. 1953, Gettysburg College	Va.
Schmude, Richard Willis	A.B. 1953, University of Michigan	Md.
Schneiberg, Harold Sidney	A.B. in Govt. 1957, The George Washington University	D.C.
Schonberger, Claude Marvin	A.B. 1954, The George Washington University	Md.
Schooley, Russell T.	A.B. 1954, University of Nevada	Nev.
Schoonmaker, Earl Fredrick	A.B. 1957, Wagner Lutheran College	Md.
Schron, Dean	B.E.E. 1956, Rensselaer Polytechnic Institute	N.Y.
Schulman, Margaret Belnick	A.B. 1938, The George Washington University	D.C.
Schumann, Alfred William	B.S. 1949, Lewis and Clark College	Va.
Schwadron, Martin Paul	B.S. 1956, College of the City of New York	N.Y.
Schwartz, Charles H.	B.S. in E.E. 1957, Drexel Institute of Technology	Pa.
Schwartz, Philip	A.B. in Govt. 1952, The George Washington University	N.Y.
Schwenk, Melvin Ramon	A.B. 1955, Nebraska Wesleyan University	Nebr.
Schwenk, Norman Gary	A.B. 1957, Nebraska Wesleyan University	Nebr.
Scott, Kenneth John	A.B. 1951, Harvard University	D.C.
Sears, Jere William	A.B. 1950, Harvard University	Md.
Sears, Mary Helen	A.B. 1950, Cornell University	Va.
Sebade, Donald Henry	A.B. 1957, The George Washington University	N.Y.
Sebastian, Arturo Almazan	LL.B. 1956, Ateneo de Manila, Philippines	Philippines
Sebastian, Leland Ancel	B.S. 1952, Arkansas State Teachers College	Ark.
Seeman, Thomas Allison	B.S. 1957, Pennsylvania State University	Pa.
Segal, Bruce Zoffin	A.B. in Govt. 1954, The George Washington University	D.C.
Seideman, Richard Reynolds	A.B. 1955, Pennsylvania State University	N.J.
Semonian, Edward, Jr.	A.B. in Govt. 1955, The George Washington University	Va.
Senter, Wallace McClure	B.S. 1951, East Tennessee State College	Va.
Sergot, Alfons Paul	Magister Juris 1927, University of Poznan, Poland	D.C.
Sewell, Norman Lewis	A.B. 1955, Morris Harvey College	Md.
Shaffer, John Scott	A.B. 1955, The George Washington University	Ohio
Shapiro, Frieda Sucher	A.B. 1942, Brooklyn College	Md.
Shapiro, Harold	B.S. 1953, Brooklyn College	Md.
Sharon, John Hurford	A.B. 1949, Princeton University	Va.
Sharp, Melvin	B.S. in E.E. 1957, Drexel Institute of Technology	Pa.
Sharpe, Albert Pancoast III	B.S. 1956, Case Institute of Technology	Va.
Shaw, Roger Neil	A.B. 1954, Catholic University of America	Md.
Sheble, John Howard III	A.B. 1942, Williams College	Va.
Shefferman, Ivan Jay	B.S. 1954, University of Maryland	D.C.
Sherling, Fred Willie	B.S. 1957, University of Tennessee	Tenn.
Sherman, Edward Lawrence	A.B. 1951, A.M. 1953, Roosevelt University	Md.
Sherry, Vincent Jerome	A.B. 1951, Western Kentucky State Teachers College	Ky.
Shields, Daniel Wooley	A.B. 1949, Princeton University	Md.
Shimabukuro, Herbert Kenki	A.B. 1952, University of Hawaii	Hawaii
Shipman, Robert Jack	A.B. 1955, West Virginia University	W.Va.
Shomette, Louis Edwin	B.S. 1953, Georgetown University	Md.
Showalter, Carl Rolston	B.S. 1951, Madison College	Va.
Sidel, Jerome Mark	B.S. 1957, University of Connecticut	D.C.
Siegel, Julian Lee	B.S. 1954, The George Washington University	Md.
Siegemund, Ralf	Diplom Geophysiker 1950, University of Berlin, Germany	D.C.
Sigalos, John Louis	B.S. 1949, Cornell University	Va.
Sigmon, Richard Roland	LL.B. 1957, University of Maryland	Md.
Silver, Robert Francis	A.B. 1953, University of Virginia	Va.
Simmons, William James, Jr.	B.S. 1957, University of Pittsburgh	Va.
Sims, Edgar, Jr.	B.S. 1951, East Tennessee State College	Va.
Sincoff, Richard Joseph	A.B. 1956, The George Washington University	Md.
Singer, Donald James	B.S. 1956, Montana State University	Md.
Singman, Henry Dick	B.S. in Phar. 1949, The George Washington University	D.C.
Sippel, Kenneth Fred	A.B. 1950, University of California	Va.
Sither, Charles Arthur	LL.B. 1948, University of Kentucky	Md.
Sitton, Paul Lyon	A.B. 1948, Emory University A.M. 1950, University of Pennsylvania	Ga.
Skellenger, David	A.B. 1951, University of Washington	D.C.
Skinner, James Evensen	B.S. 1957, University of Nevada	D.C.

Skoler, George Atley N.Y.
A.B. 1952, American International College

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B.S. 1950, M.S. 1952, Pennsylvania State University

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B.Arch. 1951, University of Michigan
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Smith, Donald Boutwell D.C.
A.B. 1956, University of Vermont

Smith, Donald Kaye Md.
A.B. 1954, University of Maryland

Smith, Donald Martin Md.
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Smith, James Alfred Va.
B.S. 1953, Bucknell University

Smith, James Enlo S.D.
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Smith, James Lawrence Ohio
B.S. 1946, Alabama College
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Smith, Michel Frans Va.
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Smith, Noel Irving Iowa
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Smith, Richard Darwin Pa.
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Smith, William Andrew III Md.
B.M.E. 1950, Catholic University of America

Sniado, John Luis Mass.
B.S. in Ch.E. 1953, University of Massachusetts

Snider, Edwin Wallace Va.
A.B. 1947, Princeton University

Snyder, Dennis Truman Md.
A.B. 1957, University of Maryland

Snyder, George Roderick Pa.
A.B. 1954, Pennsylvania State University

Snyder, Royce Wade, Jr. Va.
A.B. 1954, Dickinson College

Solem, Charles Henry Iowa
A.B. 1950, St. Olaf College

Solomon, Charles Silverton D.C.
A.B. 1952, New Mexico Highlands University

Solter, Myron Woodrum D.C.
A.B. in Govt. 1950, The George Washington University

Somer, Audrey Marie Md.
A.B. 1948, University of Missouri
M.S. 1954, The George Washington University

Somerville, Harrison, Jr. Md.
B.S. 1955, Washington and Lee University

Sommer, William Frederick, Jr. Va.
B.S. in M.E. 1950, Purdue University

Sotak, John Bernard Pa.
B.S. in E.E. 1957, University of Pittsburgh

Sovern, Maurice Alan N.Y.
B.S. 1951, Purdue University

Spaeth, Earl Chester Conn.
A.B. 1942, Oberlin College
Ph.D. 1946, University of California at Los Angeles

Spalding, Warren Dell Texas
B.B.A. 1954, West Texas State College

Spence, Harrison Michael Idaho
A.B. 1957, University of Idaho

Spencer, Claron Chipman Md.
A.B. 1954, The George Washington University

Spencer, John Richard Va.
B.S. 1949, University of Illinois

Sperling, Joseph Bear Va.
A.B. 1957, College of the City of New York

Spool, James D.C.
B.E.E. 1950, Cooper Union
LL.B. 1955, The George Washington University

Sprague, Irvine Henry Calif.
A.B. 1948, College of the Pacific

Springer, David Breckenridge Va.
B.S. 1951, Iowa State College
M.S. 1956, State University of Iowa

Sproull, Jerry Lynn Pa.
B.S. in Ch.E. 1952, Grove City College

Sprouse, Bobby Joe S.C.
B.S. 1956, Clemson Agricultural and Mechanical College

Stafford, Paul Gordon Md.
A.B. 1956, University of Maryland

Stahl, Robert Frederick Pa.
B.S. 1954, Washington College

Stair, Gaven Ken D.C.
B.S. 1956, University of Maryland

Stanhagen, William Harold Va.
B.S. in C.E. 1952, University of Southern California

Stathopoulos, George Nicholas Mich.
A.B. 1957, University of Michigan

Statland, Edward Morris D.C.
A.B. in Govt. 1954, The George Washington University

Staudt, James Everette N.D.
B.S. in M.E. 1957, North Dakota Agricultural College

Stauffer, Robert Fred Wis.
A.B. 1951, University of Wyoming

Staves, Marion Cole D.C.
B.S. 1952, American University
M.S. 1954, Georgetown University

Stearman, Joel Md.
A.B. 1950, New York University

Steger, Kenneth Merritt Va.
A.B. 1955, Michigan State College

Stein, Charles Alan Md.
B.S. 1954, Duke University
B.Ch.E. 1956, University of Florida

Stein, Murray Robert D.C.
B.S. 1953, D. C. Teachers College

Steinberg, Harvey Bert Md.
A.B. 1955, The George Washington University
Steinmetz, Richard Carlton, Jr. Ill.
B.S. in M.E. 1957, Purdue University
Steuer, Arthur D.C.
A.B. in Govt. 1954, The George Washington University
Stevens, Mary Peal N.Y.
B.S. 1939, Hampton Institute
Stiburek, Beverly Joan Idaho
B.S. 1955, Brigham Young University
Stirewalt, Edward N. Va.
A.B. 1939, High Point College
A.M. 1942, University of North Carolina
Stoffel, Wolmar John D.C.
B.S. 1957, University of Wisconsin
Stokes, James Daniel, Jr. Va.
B.S. in E.E. 1953, Tulane University
Stone, Joseph Irving Mich.
A.B. 1950, University of Michigan
Stone, Samuel Beckner Va.
B.S. in E.E. 1955, Virginia Polytechnic Institute
Stone, Steven Faraday Va.
B.Ch.E. 1957, Rensselaer Polytechnic Institute
Stoudt, John Matthew Pa.
B.S. in M.E. 1952, Pennsylvania State University
Strand, Harald Warren Minn.
A.B. 1949, St. Olaf College
A.M. 1950, University of Wisconsin
Strom, Marvin N.Y.
B.S. in M.E. 1957, University of Delaware
Sussman, Sorol Lee D.C.
B.S. 1957, Ohio State University
Sutherland, Malcolm Livingston Miss.
B.S. 1957, Carnegie Institute of Technology
Sutherland, Richard Clifton II Va.
B.S. 1955, Virginia Military Institute
Sutker, Marshall Wayne D.C.
B.S. in Ch.E. 1957, University of Illinois
Sutton, William Joseph, Jr. Pa.
A.B. in Govt. 1957, The George Washington University
Sweedler, Michael Jon N.Y.
B.E. 1957, Yale University
Swiggard, Edward Morris Va.
B.S. 1953, The George Washington University
Sykes, Grant Russell D.C.
B.B.A. 1950, Tulane University
A.M. in Govt. 1953, The George Washington University
Sylvester, Donall Hester Md.
B.S. 1932, Murray State College

T

Taffet, Hana N.Y.
A.B. 1949, The George Washington University
Takao, Frank Tokio Hawaii
A.B. 1950, University of Hawaii
Tanner, Bernard Malan Utah
B.S. 1954, University of Utah
Tarolli, Thomas Louis Va.
B.S. 1957, University of Pennsylvania
Taylor, Jesse Kavanaugh Texas
A.B. 1952, LL.B. 1952, University of Texas
Taylor, Norman Robert Md.
B.S. 1951, University of Maryland
Teoli, William Anthony, Jr. N.Y.
B.S. 1953, M.S. 1957, University of Notre Dame
Teplitz, Jerome Marvin Pa.
B.S. in Ch.E. 1957, Drexel Institute of Technology
Terry, David Thomas Ind.
B.S. in Ch.E. 1956, Purdue University
Teschner, David Va.
B.S. in E.E. 1955, Newark College of Engineering
TeSelle, John Va.
B.M.E. 1947, University of Florida
LL.B. 1951, University of Pennsylvania
Thatcher, Gordon Siddoway Idaho
B.S. 1955, Ricks College
Thomas, Carl Otis D.C.
B.S. 1957, Texas College of Arts and Industries
Thomas, Dudley Breckinridge N.J.
A.B. 1955, Washington University
Thomas, George Bell D.C.
B.S. 1952, South Carolina State College
Thomas, James Otis, Jr. D.C.
B.S. 1956, Savannah State College
Thomas, John George Md.
B.B.A. 1954, University of Miami
Thomas, Richard Marvel Md.
B.S. 1951, U. S. Coast Guard Academy
Thompson, Charles Wayne Kans.
A.B. 1955, College of Emporia
Thompson, John Charles Va.
B.S. 1957, University of Rochester
Thornburg, Joseph Carlyle N.C.
B.S. 1951, University of North Carolina
Thornton, James Wendell Va.
A.B. 1952, Michigan State University
Thornton, Leonard Henry D.C.
A.B. 1957, University of Vermont
Tidd, Joy Thomas Colo.
B.S. 1949, University of Nebraska
A.M. 1950, University of Denver
Tierney, John Lester Va.
A.B. 1929, University of Minnesota
LL.B. 1938, University of Wisconsin
LL.M. 1946, The George Washington University
Timberlake, Frederick Clyde Va.
B.B.A. 1951, Westminster College
M.B.A. 1954, Ohio State University
Tischler, Charles Merle Pa.
A.B. 1952, M.S. 1954, Columbia University
Titus, Martin Ellsworth D.C.
B.S. 1950, University of Pennsylvania
Tolford, John Charles Md.
A.B. 1954, University of Michigan
Tompkins, Donald Charles Va.
A.B. 1954, Tusculum College
Torchin, Norman Gilbert D.C.
B.S. 1951, The George Washington University
Torrence, Dale Owen N.C.
A.B. 1956, University of North Carolina
Torres, Emilio D.C.
B.S. 1933, National University
LL.B. 1937, University of the Philippines
B.S. in F.S. 1949, Georgetown University
Trachta, Stanley Willard D.C.
A.B. 1933, LL.B. 1935, University of Montana

Tracy, James Norman Md.
A.B. 1952, University of Maryland
Tremain, Kenneth Dale Ohio
B.S. 1956, Purdue University
Trimas, Marvin Pa.
B.S. in I.E. 1956, Pennsylvania State University
Trippe, Turner Clarence, Jr. Md.
B.S. in B.A. 1942, New York University
Trocino, Frank Philip N.J.
A.B. 1956, University of Maryland
Troop, Richard Gordon Va.
B.S. 1952, University of New Hampshire
Trousof, Natalie D.C.
A.B. 1947, A.M. 1950, Columbia University
Troy, Sylvia Carol Va.
A.B. 1956, University of Michigan
Tupman, Wilbur Crandell Va.
B.I.E. 1949, Georgia Institute of Technology
Turner, Asta D.C.
Diploma in Law 1942, University of Tartu, Estonia
Turner, Mary Johnston D.C.
A.B. 1951, The George Washington University
Turney, Jack Rush Md.
A.B. 1956, Western Maryland College

U

Ulkema, John Klaas Ind.
B.S. in M.E. 1957, University of Michigan
Upshaw, William Francis Fla.
B.S. 1951, M.S. 1953, Florida State University
Urbach, Peter Frank N.Y.
B.S. in E.E. 1957, Carnegie Institute of Technology
Uria, Miguel Rey Cuba
Bachillerato 1955, Baldo University, Cuba

V

Vail, Thomas L. C. Va.
A.B. 1956, The George Washington University
Vakos, George William Va.
A.B. 1953, College of William and Mary
Vance, Anthony Charles Pa.
Vandenburg, John Perley Va.
B.S. in E.E. 1956, University of Michigan
Van Gorden, John Hanford, Jr. N.Y.
A.B. 1950, Syracuse University
Van Hise, Louise Marie N.Y.
A.B. 1949, Hood College
Van Horn, Robert Means Mo.
A.B. 1956, The George Washington University
Van Kirk, Roger Alan N.J.
B.S. in E.E. 1957, University of Vermont
Van Sanford, Gordon Myron D.C.
A.B. 1949, J.D. 1954, The George Washington University
Van Slyke, Beverly Ann Md.
A.B. 1956, University of Maryland
Van Zante, Donnalee Va.
A.B. 1951, Parsons College
Varmer, Borge Kvamme Md.
Cand. juris 1950, University of Copenhagen
M.C.L. 1954, The George Washington University

Vassil, John Charles Ohio
B.S. in Ch.E. 1952, Carnegie Institute of Technology
Vautrain, Charles Edward, Jr. Md.
B.S. 1941, U. S. Coast Guard Academy
Verkler, Jerry Thomas N.M.
A.B. 1950, University of New Mexico
Verkouteren, Theodore Robert Md.
B.S. 1951, University of Maryland
Vetter, Charles Thomas, Jr. D.C.
A.B. 1946, Hamilton College
LL.B. 1953, National University
Via, George William W.Va.
A.B. 1952, University of Richmond
Vibbard, Warren John N.Y.
A.B. 1949, Hobart College
Vickers, Robert Vernon Ind.
B.M.E. 1957, General Motors Institute
Villarejo, James Victor N.Y.
A.B. 1939, University of Wisconsin
Villarreal, Hormandin Benavides Texas
A.B. 1957, Southeastern State College
Vimoljitta, Ananta Thailand
LL.B. 1948, LL.M. 1952, University of Thammasat, Thailand
Visek, Franklin Joseph Nebr.
B.S. 1957, Municipal University of Omaha
Vitone, George Peter Va.
A.B. 1952, Columbia University
Voight, Jack Wendel Tenn.
B.S. 1956, Tennessee Institute of Technology

W

Wade, Ewell Gene Utah
B.S. 1953, Brigham Young University
Wade, Manley Burt Hawaii
A.B. 1953, Pacific Union College
Wadsworth, Harold Wayne Utah
B.S. 1952, Utah State Agricultural College
Waldron, Robert Earl Texas
B.B.A. 1954, University of Texas
Walker, James Franklin N.C.
B.S. 1949, Hampton Institute
Walker, John Henry Va.
A.B. 1957, University of South Dakota
Walker, Nancy Anne N.C.
A.B. 1955, University of North Carolina
Walker, Sidney Joseph Va.
B.S. 1942, Eureka College
LL.B. 1949, University of Miami
Waltman, Vera Melia N.Y.
A.B. 1950, A.M. 1953, University of Chicago
Ward, Carl Gwynne W.Va.
LL.B. 1954, West Virginia University
Ward, Joseph Leo Nev.
A.B. 1951, University of Nevada
Ward, Julia D.C.
A.B. 1923, Ph.D. 1940, Bryn Mawr College
Wardell, Richard Norman D.C.
B.S. 1952, Illinois Institute of Technology
Warden, Ernest Albert Kans.
A.B. 1955, Municipal University of Wichita
Warden, William Franklin, Jr. Fla.
A.B. 1954, Stetson University
Warlick, George William D.C.
B.S. in E.E. 1956, Duke University

Warlick, Robert Patterson N.C.
A.B. 1948, Brown University
M.B.A. 1950, Harvard University
Washington, John Francis Okla.
B.B.A. 1954, University of Oklahoma
Watkins, Robert Malcolm, Jr. D.C.
Watkins, William T. D.C.
A.B. 1950, The George Washington University
Watson, Gerald LeRoy Va.
A.B. in Govt. 1951, The George Washington University
Watson, Robert Carlyle Va.
A.B. in Govt. 1953, The George Washington University
Watterson, James Godfrey Ohio
B.S. 1954, Case Institute of Technology
Watwood, Lynn Marion, Jr. Va.
A.B. 1955, The George Washington University
Weatherhead, Milton N. Va.
A.B. 1954, Princeton University
Weaver, James Richard Pa.
B.S. 1957, Elizabethtown College
Webb, Harold N.Y.
B.S. 1953, University of Alabama
Webster, Robert Oswald Va.
B.M.E. 1947, Ohio State University
Weilacher, Robert George D.C.
B.S. 1957, Columbia University
Weinstein, Les J. Pa.
B.S. in M.E. 1956, University of Pennsylvania
Weinstein, Paul Harold D.C.
B.S. 1955, Washington and Lee University
Weissbrot, Paul N.J.
B.S. 1947, Rutgers University
Welch, Byron Kerr Okla.
A.B. 1949, University of Oklahoma
A.M. 1950, University of California
Welch, Paul Hesse D.C.
A.B. in Govt. 1957, The George Washington University
Welch, Pierre Robert, Jr. D.C.
A.B. 1955, University of Michigan
Weld, John Philip N.C.
B.S. 1957, East Carolina College
Wells, Robert Oscar, Jr. D.C.
A.B. 1952, The George Washington University
Wendt, William Robert Va.
B.S. in A.E. and M.E. 1935, University of Wisconsin
Wessler, Ira Ely N.Y.
A.B. 1956, St. Lawrence University
Wexler, Robert Eugene D.C.
A.B. 1954, University of South Dakota
Weycer, Albert Sheldon Va.
B.S. in Ch.E. 1956, University of Wisconsin
Wheatley, James Holman Va.
A.B. 1956, University of Richmond
Wheeler, Larry Myron Ga.
B.B.A. 1954, University of Georgia
Whillock, Carl Simpson Ark.
B.S. 1949, A.M. 1950, University of Arkansas
Whisenhunt, Fred Smith, Jr. N.C.
B.Ch.E. 1956, North Carolina State College of Agriculture and Engineering
White, Alson Pharoah, Jr. Ariz.
B.S. in C.E. 1948, University of Arizona
White, John Leslie Va.
A.B. 1948, M.S. 1949, Kalamazoo College
White, Robert DuWayne D.C.
A.B. 1956, Michigan State College
White, Wayne Day Texas
A.B. 1953, Brigham Young University
Wiesner, Charles Joseph D.C.
Doctor juris 1929, Charles University, Czechoslovakia
Wilde, Peter Van Dyke Va.
B.S. in Ch.E. 1955, Lehigh University
Wilfond, Arthur E. Pa.
B.S. 1956, Drexel Institute of Technology
Wilhite, Billy John Tenn.
B.S. 1957, Tennessee Polytechnic Institute
Wilken, William Jacob Va.
A.B. 1949, State University of Iowa
Willett, Edward Farrand, Jr. Md.
A.B. 1954, Emmanuel Missionary College
Willette, Helen Barbara N.H.
A.B. 1941, Syracuse University
Williams, Jack Haven Pa.
A.B. 1956, Pennsylvania State University
Williams, James Wadsworth, Jr. Va.
B.S. 1953, Virginia Military Institute
Williams, James William Va.
B.S. in E.E. 1957, Vanderbilt University
Williams, Melvin Pearson Va.
B.E.E. 1957, Rensselaer Polytechnic Institute
Williams, Roger Va.
A.B. 1952, University of North Carolina
Williamson, Harold Anthony Va.
B.S. in M.E. 1957, University of Wisconsin
Willingham, Lewis Elbert Va.
A.B. 1953, Bethany College
Willmore, Daniel Edward Idaho
A.B. in B.A. 1953, Idaho State College
Willoner, Ronald Andrew Md.
A.B. 1955, University of Maryland
Willson, Leonard Alfred, Jr. N.C.
B.M.E. 1957, North Carolina State College
Wilsey, George Frank Fla.
B.S. 1953, Florida State University
Wilson, Paul Grier, Jr. Md.
A.B. 1950, University of Maryland
Wilson, William Wayne Va.
A.B. 1956, Northwestern University
Wise, Robert Wayne Kans.
B.S. 1956, McPherson College
Wisecarver, Betty Marie D.C.
A.B. 1957, University of Virginia
Wiseman, Morris Md.
B.S. in Ch.E. 1955, Drexel Institute of Technology
Wiser, C. Lawrence Md.
B.S. 1952, University of Maryland
Wittle, Kenneth Earl Md.
A.B. 1956, Elizabethtown College
Wohl, Paul N.Y.
A.B. in Govt. 1954, The George Washington University
Wolf, Fred Fuhrman D.C.
LL.B. 1952, Harvard University
Wolffe, Franklin David Pa.
B.S. in Ch.E. 1954, University of Maryland
Wolfley, Earl Scott Va.
B.S. 1952, Brigham Young University
Wolfson, Nicholas Karl N.Y.
A.B. 1953, Columbia University
LL.B. 1956, Harvard University
Wong, James Aubrey D.C.
B.M.E. 1951, The George Washington University

Wood, Charles Bryant Va.
B.S. 1951, American University
Woodward, Charles Carroll MacCubbin Md.
B.S. in C.E. 1951, Virginia Military Institute
Woodworth, Howard M. Md.
B.S. 1942, University of Minnesota
Woolls, James Va.
A.B. 1953, Virginia Military Institute
Worrall, John William Pa.
A.B. 1952, University of Pennsylvania
Worth, Daniel Pharr D.C.
B.S. in M.E. 1949, Purdue University
Worthington, Raymond Leroy Md.
B.S. 1941, University of Maryland
Wren, John Christian W.Va.
A.B. 1954, Haverford College
Wrenn, William Richard Va.
B.S. 1953, High Point College
Wright, Walter Vance Va.
B.S. 1956, Pennsylvania State University
Wrubel, Ann Louise Conn.
A.B. 1954, Mount Holyoke College
Wunsch, Tam Maria D.C.
LL.D. 1930, Charles University, Czechoslovakia

Y

Yeager, Arthur George Fla.
B.E.E. 1956, University of Florida
Yesson, Charles Joseph Pa.
B.S. 1950, Pennsylvania State Teachers College, Bloomsburg
Yodice, John Salvatore N.Y.
A.B. 1954, Brooklyn College
York, E. T., Jr. Ala.
B.S. 1942, M.S. 1946, Alabama Polytechnic Institute
Ph.D. 1949, Cornell University
Yorkdale, Paul Harrison Va.
Young, Truman Richards Calif.
LL.B. 1932, The George Washington University
Youngs, Maynard Lee Mich.
A.B. 1954, Kalamazoo College
Yurow, John Jesse Md.
A.B. 1953, The George Washington University

Z

Zabriskie, John Edmund Va.
A.B. 1955, Middlebury College
Zieg, Robert Lloyd Va.
B.I.E. 1956, General Motors Institute
Ziems, Robert Frederick Va.
B.S. 1951, Michigan College of Mining and Technology
Zimmer, Andrew Peter N.M.
A.B. 1951, Harvard University
Zimmerman, Isaiah Morris Calif.
A.B. 1951, M.S.W. 1953, University of California
Zimmerman, Jack Pearce Kans.
B.S. 1948, U. S. Naval Academy
Zinn, Donald Edward Pa.
B.S. in M.E. 1954, Pennsylvania State University
Zitomer, Joseph Md.
LL.B. 1951, The George Washington University
Zugel, Francis Kopp Md.
B.S.E. 1957, The George Washington University
Zuzik, Michael Benedict Pa.
A.B. 1952, University of Pittsburgh
A.M. 1957, Georgetown University
Zweben, Murray N.Y.
B.S. 1952, M.S. 1953, New York State College for Teachers, Albany

SUMMARIES OF REGISTRATION

SPRING SEMESTER 1956–57, SUMMER TERM 1957, FALL SEMESTER 1957-58

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

Alabama	5	New Mexico	6
Arizona	4	New York	86
Arkansas	7	North Carolina	19
California	20	North Dakota	6
Colorado	6	Ohio	29
Connecticut	11	Oklahoma	11
Delaware	6	Oregon	4
District of Columbia	259	Pennsylvania	107
Florida	16	Rhode Island	5
Georgia	5	South Carolina	7
Idaho	12	South Dakota	9
Illinois	20	Tennessee	13
Indiana	14	Texas	17
Iowa	10	Utah	12
Kansas	11	Vermont	3
Kentucky	10	Virginia	355
Louisiana	4	Washington	7
Maine	5	West Virginia	14
Maryland	222	Wisconsin	12
Massachusetts	18	Wyoming	4
Michigan	19	Hawaii	14
Minnesota	8	Puerto Rico	5
Mississippi	4	Canada	1
Missouri	11	Cuba	2
Montana	1	Greece	1
Nebraska	6	Korea	2
Nevada	9	Latvia	1
New Hampshire	5	Philippines	3
New Jersey	26	Thailand	5

GRADUATES OF COLLEGES REGISTERED IN THE LAW SCHOOL

Adelphi College	2	Arellano University, Philippines	1
Agnes Scott College	1	Arizona State College, Tempe	1
Akron, University of	1	Arizona, University of	7
Alabama College	1	Arkansas Agricultural and Mechanical College	1
Alabama Polytechnic Institute	2	Arkansas State Teachers College	2
Alabama, University of	5	Arkansas, University of	5
Albertus Magnus College	1	Ateneo de Manila, Philippines	1
American International College	3	Athens, University of, Greece	1
American University	10	Auburn Community College	1
Amherst College	2	Augustana College	3
Antioch College	1		

Baldo University, Cuba	1
Ball State College	1
Barcelona, University of, Spain	1
Barnard College	1
Berea College	1
Berlin, University of, Germany	1
Bethany College	1
Bordeaux, University of, France	1
Boston University	4
Bowdoin College	2
Bowling Green State University	2
Bradley University	1
Brandeis University	1
Bridgeport, University of	1
Brigham Young University	14
Brooklyn College	8
Brooklyn, Polytechnic Institute of	4
Brown University	6
Bryn Mawr College	1
Bucharest University, Hungary	1
Bucknell University	2
Buffalo, University of	7
Butler University	1
Cairo Law School, Egypt	1
California Institute of Technology	3
California, University of	8
California, University of, at Los Angeles	5
Carnegie Institute of Technology	10
Carroll College	1
Case Institute of Technology	6
Catawba College	1
Catholic University of America	6
Central College, Mo.	1
Centre College	1
Charles University, Czechoslovakia	3
Charleston, College of	1
Chicago, University of	2
Cincinnati, University of	4
Citadel, The	2
Clark University	2
Clarkson College of Technology	2
Clemson Agricultural College	3
Colby College	2
Colgate Rochester Divinity School	1
Colgate University	1
Colorado School of Mines	2
Colorado, University of	6
Columbia University	24
Connecticut, University of	4
Cooper Union	2
Copenhagen, University of, Denmark	1
Cornell University	17
Dartmouth College	4

Davis and Elkins College	1
Davidson College	1
Dayton, University of	2
Delaware, University of	8
Denison University	1
Denver, University of	8
DePauw University	1
Detroit, University of	1
Dickinson College	3
District of Columbia Teachers College	3
Drexel Institute of Technology	14
Dubuque, University of	1
Duke University	15
Duquesne University	1
East Carolina College	1
East Tennessee State College	3
Elizabethtown College	2
Emanuel Missionary College	2
Emory University	4
Emporia, College of	2
Eureka College	1
Fairmont State College	1
Far Eastern University, Philippines	1
Florida Southern College	1
Florida State College for Women	1
Florida State University	5
Florida, University of	12
Fordham University	5
Fort Hays State College, Kans.	1
Franklin and Marshall College	1
Gannon College	1
General Motors Institute	3
Geneva, University of, Switzerland	1
George Washington University, The	192
Georgetown University	27
Georgia Institute of Technology	8
Georgia, University of	5
Gettysburg College	7
Grinnell College	1
Grove City College	2
Hamilton College	4
Hamline University	1
Hampden-Sidney College	2
Hampton Institute	2
Harpur College	1
Harvard University	32
Haverford College	2
Hawaii, University of	12
High Point College	2
Hobart College	2
Hollins College	1
Hood College	1
Hope College	1
Howard University	2

Idaho State College	3
Idaho, University of	5
Illinois Institute of Technology	4
Illinois, University of	15
Indiana State Teachers College	1
Indiana University	10
Iowa State College	8
Iowa, State University of	10
Iowa Wesleyan College	1
Jamestown College	1
Jena, University of, Germany	1
Johns Hopkins University	5
Kalamazoo College	2
Kansas City, University of	1
Kansas State College of Agriculture and Applied Science	3
Kansas State Teachers College, Emporia	2
Kansas, University of	7
Kentucky, University of	4
Kent State University	2
King Ferdinand I, University of, Cluj	1
Knox College	1
Lafayette College	5
Lawrence Institute of Technology	1
Lebanon Valley College	3
Lehigh University	6
Lewis and Clark College	2
Linfield College	1
Louisiana Polytechnic Institute	1
Louisiana State University	4
Louisville, University of	3
Lowell Institute of Technology	1
Loyola University, Ill.	1
Lynchburg College	1
Madison College	2
Maine, University of	1
Marietta College	1
Marquette University	2
Marshall College	1
Maryknoll Seminary	1
Maryknoll Teachers College	1
Maryland, University of	71
Maryville College	2
Masaryk University, Czechoslovakia	1
Massachusetts Institute of Technology	7
Massachusetts, University of	5
McGill University, Canada	1
McMaster University, Canada	1
McPherson College	3
Miami University	2
Miami, University of	5
Michigan College of Mining and Technology	6
Michigan State College	6
Michigan, University of	26
Middlebury College	4
Millsaps College	1
Minnesota College of Mining and Technology	1
Minnesota State Teachers College, Moorehead	1
Minnesota, University of	6
Mississippi College	1
Mississippi Southern College	1
Mississippi, University of	3
Missouri School of Mines and Metallurgy	2
Missouri, University of	6
Montana State University	3
Morgan State College	1
Morris Harvey College	1
Mount Holyoke College	2
Mount Union College	1
Murray State College	1
Muskingum College	1
National School of Engineering of Lille, France	1
National University	5
Nebraska, University of	4
Nebraska Wesleyan University	3
Nevada, University of	9
New Hampshire, University of	6
New Mexico College of Agriculture and Mechanic Arts	1
New Mexico Highlands University	2
New Mexico, University of	5
New York, College of the City of	12
New York State Maritime College	2
New York State Teachers College, Albany	1
New York University	15
Newark College of Engineering	4
Niagara University	1
North Carolina State College of Agriculture and Engineering	2
North Carolina, University of	17
North Dakota Agricultural College	1
North Dakota State School of Science	1
North Dakota State Teachers College	1
North Texas State College	2
Northeastern University	8
Northern State Teachers College	1
Northwest Nazarine College	1
Northwestern University	4

Norwich University	1
Notre Dame Seminary	1
Notre Dame, University of	4
Oberlin College	2
Ohio State University	15
Ohio University	1
Ohio Wesleyan University	2
Oklahoma Agricultural and Mechanical College	1
Oklahoma, University of	9
Omaha, Municipal University of	2
Oregon State College	5
Oregon, University of	1
Pacific, College of the	2
Pacific Union College	1
Paris, University of, France	2
Parsons College	1
Pennsylvania Military College	1
Pennsylvania State Teachers College, Bloomsburg	1
Pennsylvania State Teachers College, Indiana	1
Pennsylvania State Teachers College, Kutztown	1
Pennsylvania State University	38
Pennsylvania, University of	16
Pennsylvania, Woman's Medical College of	1
Philippines, University of the	1
Pittsburgh, University of	18
Poznan, University of, Poland	1
Pratt Institute	1
Presbyterian College	1
Princeton University	13
Principia College	3
Providence College	3
Puerto Rico, Polytechnic Institute of	2
Puerto Rico, University of	4
Purdue University	23
Queens College	5
Radcliffe College	3
Randolph-Macon College	2
Reed College	1
Rensselaer Polytechnic Institute	16
Rhode Island, University of	2
Richmond College	1
Richmond, University of	6
Ricks College	2
Rider College	2
Roanoke College	1
Rochester, University of	2
Roosevelt University	2
Rose Polytechnic Institute	3
Rutgers University	6
St. Anselm's College	
St. Bonaventure University	
St. John's College, Md.	
St. John's Law School	
St. John's University, N. Y.	
St. Lawrence University	
St. Louis University	
St. Mary College	
St. Mary's Seminary	
St. Olaf College	
St. Vincent College	
San Francisco, University of	
San Jose State College	
Savannah State College	
Seattle University	
Seoul National University, Korea	
Seton Hall University	
Shimer College	
Siena College	
Simpson College, Iowa	
Smith College	
South Carolina State College	
South Carolina, University of	
South Dakota School of Mines and Technology	
South Dakota State College	
South Dakota, University of	
South, University of the	
Southeastern State College	
Southern California, University of	
Southwestern State College	
Stanford University	
Stetson University	
Stevens Institute of Technology	
Swarthmore College	
Sweet Briar College	
Syracuse University	
Tartu, University of, Estonia	
Taylor University	
Tennessee Polytechnic Institute	
Tennessee, University of	
Texas Christian University	
Texas College of Arts and Industries	
Texas Technological College	
Texas, University of	
Texas Western College	
Thai Naval Academy, Thailand	
Thammasat, University of, Thailand	
Toledo, University of	
Trinity College	
Tufts College	
Tulane University	
Tusculum College	

Union University	1
U. S. Coast Guard Academy	7
U. S. Merchant Marine Academy	4
U. S. Military Academy	7
U. S. Naval Academy	11
Ursinus College	1
Utah State Agricultural College	1
Utah, University of	13
Vanderbilt University	5
Vassar College	1
Vermont, University of	4
Villanova University	3
Villanueva, University of, Cuba	1
Virginia Military Institute	8
Virginia Polytechnic Institute	12
Virginia, University of	17
Wagner Lutheran College	1
Wake Forest College	3
Washington College	1
Washington and Lee University	7
Washington Missionary College	2
Washington, State College of	1
Washington University	5
Washington, University of	11
Wayne University	2
Waynesburg College	1
Wesleyan University	1
West Texas State College	1
West Virginia Institute of Technology	1
West Virginia State College	1
West Virginia University	12
Western Illinois State College	1
Western Kentucky State Teachers College	1
Western Maryland College	4
Western Michigan College of Education	1
Western Reserve University	2
Westminster College	1
Westmont College	1
Wichita, Municipal University of	2
Wilkes College	1
William and Mary, College of	2
Williams College	3
Wisconsin, University of	22
Wooster, College of	2
Worcester Polytechnic Institute	1
Wyoming, University of	3
Yale University	15
Youngstown College	2
Zurich, University of, Switzerland	1

SUMMARY OF LAW SCHOOL REGISTRATION

FALL SEMESTER 1957–58

	Men	*Women*	*Total*
First Year	408	25	433
Second Year	285	22	307
Third Year	277	12	289
Candidates for the degree of Master of Laws	41	3	44
Candidates for the degree of Master of Comparative Law	6	..	6
Candidates for the degree of Master of Comparative Law (American Practice)	7	..	7
Candidates for the degree of Doctor of Juridical Science	3	..	3
Unclassified	25	..	25
Total	1052	62	1114

INDEX

A

Academic status of the University, 5
Administration officers of, 4
Admission, 18–20
Advanced standing, 18–19
Attendance, 24

B

Bachelor of Laws, degree of, 18, 24–26, 29–32

C

Calendar of the School, 1958–59, vi
Classification of students, 27
Committees of the Faculty, 13–14
Continuing Legal Education, 20, 33
Course numbers, explanation of, 39
Courses of Instruction, 37–50
Curriculum, Bachelor of Laws and Juris Doctor, 30–32

D

Dean's Council, 13
Degrees, 29–35
  Conferred February, June, and October, 1957, 51–56
Doctor of Juridical Science, degree of, 19–26, 32, 34–35
Dormitories, 27–28

E

Emeritus professors, 9
Employment, student, 28
Evening division, 16, 31–32
Examinations, 25
Exclusion and probation for poor scholarship, 26-27

F

Faculty, 9–13
Fees and financial regulations, 20–22
Fellowships, 22
Foreign Lawyers:
  Programs of study for, 32–33
  Master of Comparative Law, degree of, 19, 26, 32–33, 34

G

Geographical distribution of students, 83
Grades, 25–26
Graduate program, 32–35
Graduates of colleges registered in the School, 83–87
Graduation requirements, 25

H

Health Administration, 28–29
History of the University, 5
Honors, 30
Hours of instruction, 16

J

Juridical Science, degree of Doctor of, 19, 26, 32, 34-35
Juris Doctor, degree of, 18, 26, 29, 30

L

Law Review, 17
Library, 16–17
Living accommodations, 27–28
Loan funds, 24–27

M

Master of Comparative Law, degrees of, 19, 26, 32–33, 34
Master of Laws, degree of, 19, 26, 32, 33, 33-34

N

Nondegree study, 33

O

Objectives, 15
Order of the Coif, 18

P

Patent Law, 31
Patent, Trade-Mark, and Copyright Law, research in, 49
Placement, 28
Practice and Trial Practice Court, 30
Prizes, 23
Probation, 26–27
Programs of study, 15–16
Public Law, research training in, 33

R

Refund of tuition, 21–22
Registration, 20
Regulations, 24–27
Residence halls, 27–28
Residence requirements, 24, 29, 30, 33–34
Right to change rules, 27
Right to dismiss students, 27

S

Scholarship, 18–19, 26–27, 29–30, 33–34
Scholarships, 22–23
Student:
  Bar Association, 17
  Employment, 28
  Life, 27–29
Students registered, 1957, 57–82
Summaries of registration, 83–87
Summer Term, 35

T

Trial Practice Court, 30
Trustees, Board of, 3

U

Unclassified students, 19, 27
University:
  Academic status, 5
  Colleges, Schools, Divisions, 5
  History, 5
  Location, 6, 14–15

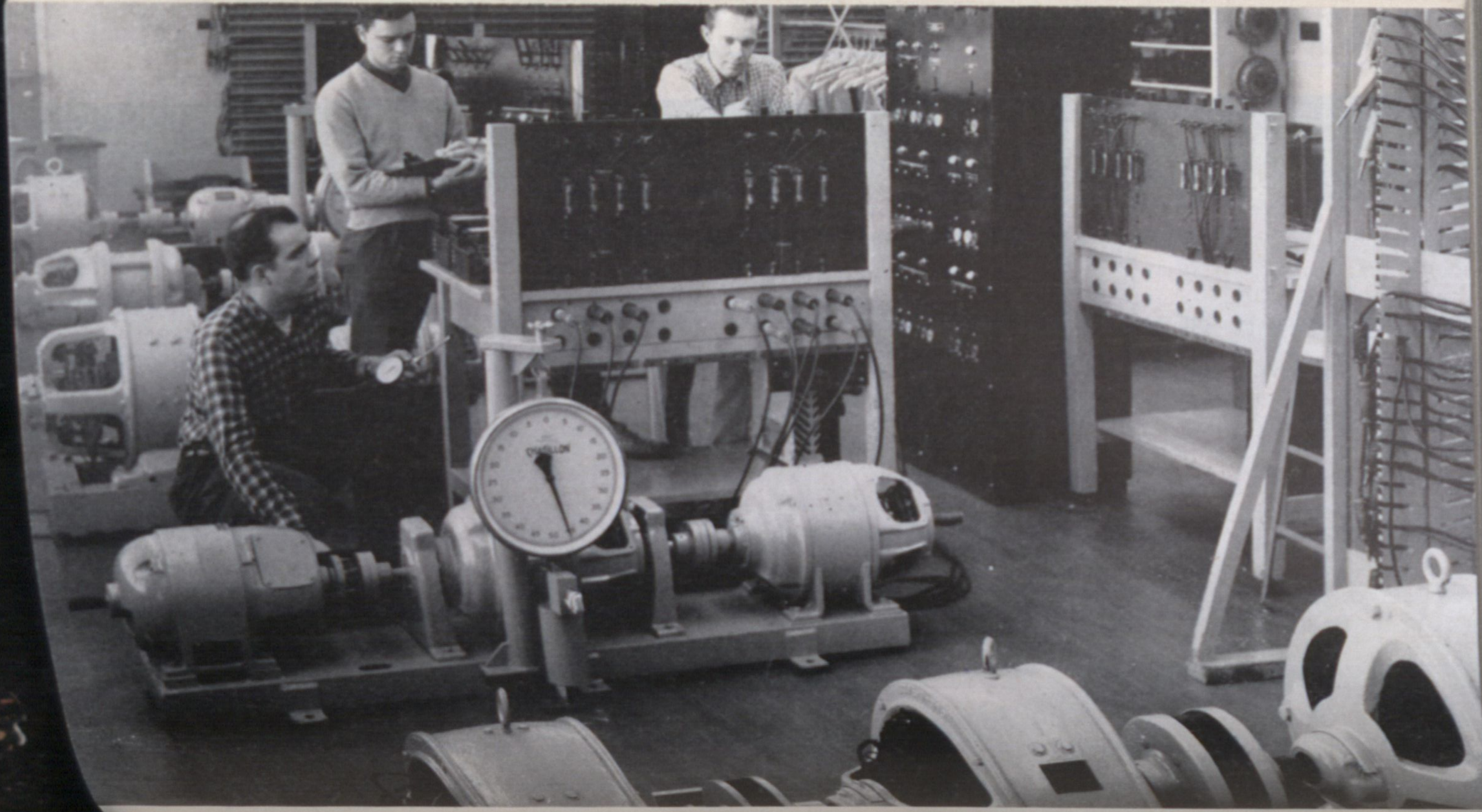
V

Van Vleck Case Club, 17

W

Withdrawal and refunds, 21–22

Tompkins Hall of Engineering



One of the Electrical Engineering Laboratories

THE SCHOOL OF ENGINEERING

1958-59

THE GEORGE WASHINGTON UNIVERSITY BULLETIN

VOL. LVII

No. 5

THE SCHOOL OF ENGINEERING

WASHINGTON 6, D. C.

PUBLISHED IN FEBRUARY
MCMLVIII
BY THE UNIVERSITY

CONTENTS

PAGE
Calendar of the School of Engineering vi
The University 1
The Board of Trustees 3
Officers of Administration 4
History and Organization 6
The School of Engineering 11
Faculty and Staff of Instruction 13
General Information 18
Hours of Instruction 19
Veterans Education 19
Air Force Reserve Officers' Training Corps 21
Health Administration 22
Living Accommodations 23
Religious Life 24
Placement Office 24
Testing and Counseling Center 24
Student Union 25
Davis-Hodgkins House 25
International House 25
Student Activities 26
Student Organizations 29
Admission 30
Registration 33
Fees and Financial Regulations 34
Scholarships, Prizes, Financial Aid 36
Regulations 42
Bachelor's Degrees 52
Master's Degrees 56
Courses of Instruction 61
Engineering 63
Undergraduate Courses 63
Civil Engineering 63
Electrical Engineering 66
Mechanical Engineering 69
Graduate Courses 72
Civil Engineering 72
Electrical Engineering 73
Engineering Administration 74
Engineering Science 76
Mechanical Engineering 78
Required and Elective courses from other departments 79
Alumni and Allied Associations 92
Index 93

CALENDAR

1958–59

Date	Day	Occasion
1958		
Fall Semester:		
Sept. 2–17	Tuesday through Wednesday	Preadvising for all entering students
Sept. 11	Thursday	Orientation Assembly for all new students
Sept. 12 and 15	Friday and Monday	Curriculum assemblies*
Sept. 16	Tuesday	Freshman tests Examinations for students who wish to qualify for advanced courses or waive curriculum requirements
Sept. 18 and 19	Thursday and Friday	Registration
Sept. 22	Monday	Academic year begins
Oct. 3	Friday	Last day for filing problem subjects by candidates for Master's degrees to be conferred in February
Oct. 18	Saturday	Fall Convocation
Nov. 11	Tuesday	Veterans Day. Holiday
Nov. 27–29	Thursday through Saturday	Thanksgiving recess
Dec. 13	Saturday	Graduate Record Examination
Dec. 22–Jan. 3	Monday through Saturday	Christmas recess
1959		
Jan. 5	Monday	Classes resume Last day for receiving theses and problems of candidates for the Master's degrees to be conferred in February
Jan. 5–17	Monday through Friday	Advising for freshmen, sophomores, and all entering students
Jan. 14	Wednesday	Last day of classes for the fall semester
Jan. 19–27	Monday through Tuesday	Examination period
Spring Semester:		
Jan. 28	Wednesday	Examinations for students who wish to qualify for advanced courses or waive curriculum requirements

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* All new students are required to attend one Curriculum Assembly.

Date	Day	Occasion
Jan. 29 and 30	Thursday and Friday	Registration
Feb. 2	Monday	Classes resume for the spring semester
Feb. 13	Friday	Last day for filing problem subjects by candidates for Master's degrees to be conferred in June
Feb. 23	Monday	Winter Convocation. Holiday
March 27–April 1	Friday through Wednesday	Easter recess
April 1	Wednesday	Applications for scholarships for 1959–60 should be filed
April 11	Saturday	Graduate Record Examination
May 1	Friday	Last day for receiving theses and problems of candidates for Master's degrees to be conferred in June
May 13	Wednesday	Last day of classes for the spring semester
May 18-26	Monday through Tuesday	Examination period
May 31	Sunday	Baccalaureate Sermon
June 3	Wednesday	Commencement
SUMMER SESSIONS:		
June 15	Monday	Registration for eight-week term
June 16	Tuesday	Classes begin
Aug. 7	Friday	Eight-week term ends Last day for receiving theses for the Master's degrees to be conferred in October
Sept. 17 and 18	Thursday and Friday	Registration for the fall semester of the academic year 1959–60

THE UNIVERSITY

THE BOARD OF TRUSTEES

The Board of Trustees of the University is composed of the President of the University ex officio and the following persons by election:

Robert Vedder Fleming, LL.D., *Chairman*
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John Edgar Hoover, LL.M., LL.D.
Frank Atherton Howard, B.S. in M.E., LL.B.
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John Keown McKee
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Samuel Spencer, LL.B.
Walter Rupert Tuckerman, A.B., LL.B., LL.D.
James Edwin Webb, A.B., LL.D.
Alexander Wetmore, Ph.D., Sc.D.
*Charles Stanley White, M.D., Sc.D.
Lloyd Bennett Wilson

---

* Nominated by the alumni.

OFFICERS OF ADMINISTRATION*

THE UNIVERSITY

Cloyd Heck Marvin, Ph.D., LL.D., *President of the University*
Oswald Symister Colclough, B.S., LL.B., LL.D., *Dean of Faculties*
Myrna Pauline Sedgwick, A.B., *Administrative Secretary*
Henry William Herzog, B.S., *Treasurer*
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Virginia Randolph Kirkbride, A.M., *Director of Activities for Women*
Don Carlos Faith, Ph.D., *Director of Activities for Men; Director of Veterans Education*
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Ruth Harriet Atwell, A.M., *Director of Women's Athletics*
Robert Faris, B.S., *Director of Men's Athletics*
Carl Swyter, B.S. in E.E., *Director of Air Science*
John Francis Latimer, Ph.D., *Assistant Dean of Faculties; University Marshal*

THE COLLEGES, SCHOOLS, AND DIVISIONS

George Martin Koehl, A.M., *Dean of the Junior College*
Calvin Darlington Linton, Ph.D., *Dean of Columbian College*
Arthur Edward Burns, Ph.D., *Dean and Chairman of the Graduate Council*
John Parks, M.S., M.D., *Dean of the School of Medicine*
____________________, *Dean of the Law School*
Martin Alexander Mason, B.S. in Eng., Ing.-Dr., *Dean of the School of Engineering*
Charles Watson Bliven, M.S., *Dean of the School of Pharmacy*
James Harold Fox, A.M., Ed.D., *Dean of the School of Education*
____________________, *Dean of the School of Government*
Grover LaMarr Angel, A.M., Ed.D., *Dean of the College of General Studies*

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* The Officers of Administration listed here are for the academic year 1957–58.

Elmer Louis Kayser, Ph.D., LL.D., *Dean of the Division of University Students*
Warren Reed West, Ph.D., *Dean of the Division of Special Students*
Victor Frederick Ludewig, A.B., B.S., *Administrator of the University Hospital*
Angus MacIvor Griffin, Ph.D., *Associate Dean of the School of Medicine*
Alvin Edward Parrish, M.D., *Associate Dean of the School of Medicine*
William Lewis Turner, Ph.D., *Assistant Dean of the Junior College*
Carr Bartleson Lavell, A.M., *Assistant Dean in the Junior College*
Carville Dickinson Benson, A.B., LL.B., S.J.D., *Assistant Dean of the Law School*
Louis Harkey Mayo, B.S., LL.B., *Assistant Dean of the Law School*
Carl Hugo Walther, B.E., M.C.E., *Assistant Dean in the School of Engineering*
Robert Meyer Leonard, Ph.D., *Assistant Dean of the School of Pharmacy*
Blake Smith Root, A.M., Ed.D., *Assistant Dean of the School of Education*
Joe Lee Jessup, M.B.A., *Assistant Dean in the School of Government*
Walter Harold Hayes, Jr., A.M., *Assistant Dean in the College of General Studies*
John Gage Allee, Jr., Ph.D., *Assistant Dean of the Division of University Students*

HISTORY AND ORGANIZATION

HISTORY

The idea of a university located in the Capital of the Nation was sponsored by George Washington, who during his public life urged the establishment of such an institution and who in his will left fifty shares of stock in the Potomac (Canal) Company for the endowment of a university to be established in the District of Columbia "to which the youth of fortune and talents from all parts thereof might be sent for the completion of their Education in all the branches of polite literature;—in arts and Sciences,—in acquiring knowledge in the principles of Politics & good Government".

It was George Washington's hope that the "General Government" would extend toward such an institution "a fostering hand". No steps were taken by Congress to carry out the provision of Washington's will, and the stock that he had bequeathed for the establishment of a university in the District of Columbia became valueless owing to the failure of the Potomac Canal properties.

Meanwhile, however, a movement was started by private persons under the leadership of Luther Rice to establish an institution of higher learning at the seat of the National Government for the education of the Baptist ministry and to afford general collegiate training. In 1819 a association was formed by Luther Rice, Obadiah B. Brown, Spencer H Cone, and Enoch Reynolds for the purpose of raising funds to buy lan for the use of the college.

A group of the Nation's leaders who were especially interested i Washington's idea became patrons of the college and contributed t funds raised for the purchase of land and erection of buildings. Amon them were James Monroe, President of the United States; William H Crawford, Secretary of the Treasury; John C. Calhoun, Secretary o War; William Wirt, Attorney General; Return J. Meigs, Postmast General; and thirty-two members of the Congress.

Legally to implement the college a petition was made to Congress fo the incorporation of "the General Convention of the Baptist Denomin tion in the District of Columbia for evangelical and literary purposes This petition was denied by Congress, on April 26, 1820, because of i sectarian character.

Failing to obtain a denominational charter, members of the associ tion enlarged their objective to embrace national aims, and with t sponsorship of Government leaders there was presented in Congres bill for the incorporation of "the Columbian Society for literary purposes", it being proposed to realize in this way "the aspirations of Washington, Jefferson and Madison for the erection of a university at the seat of the federal government".

Acting upon this second petition, on February 9, 1821, Congress chartered Columbian College in the District of Columbia, inserting in the charter by special action the provision "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor or pupil, be refused admittance into said College or denied any of the privileges, immunities or advantages thereof, for or on account of his sentiments in matters of religion".

Thus Columbian College in the District of Columbia was chartered by Congress as one of the early nonsectarian institutions of higher learning in the United States, under the distinguished favor of President James Monroe and members of his Cabinet.

A tract of approximately forty-seven acres, extending about one-half mile northwest of Boundary Street (Florida Avenue) between Fourteenth and Fifteenth Streets, was purchased and by 1822 the main building was completed sufficiently to use.

Two years later, when the first Commencement was held on December 15, 1824, Congress and the Supreme Court adjourned their sessions to enable their members to attend the exercises. President Monroe, John Quincy Adams, John C. Calhoun, Henry Clay, and the Marquis de Lafayette headed the eminent company in attendance.

By an act of Congress of March 3, 1873, the name of the college was changed to "Columbian University", in recognition of the enlarged scope of the institution. In 1884 the University was moved from its first location on "College Hill", now Columbia Heights, to the new University Hall built for it at Fifteenth and H Streets. Near-by buildings accommodated the School of Medicine and, somewhat later, the Law School.

For a period of six years, from 1898 to 1904, the University was placed under control of the Baptist Denomination. In 1904 an act restoring the original secular character of the University and authorizing change of name to The George Washington University was passed by Congress.

Subsequently all the colleges, schools, and divisions of the University except the School of Medicine were brought together in the area bounded by Nineteenth, Twenty-third, and G Streets, and Pennsylvania Avenue NW. The School of Medicine is situated on H Street between Thirteenth and Fourteenth Streets NW.

The endowment of the University is $7,000,000.

THE COLLEGES, SCHOOLS, AND DIVISIONS

The George Washington University includes fourteen colleges, schools, and divisions, as follows:

The Junior College offers the work of the first two years of the four-year college program in the liberal arts and sciences and two years of pre-professional work. Each of these curricula leads to the degree of Associate in Arts. It also offers two-year terminal curricula. Those in Accounting and Secretarial Studies lead to the degree of Associate in Arts; those in Home Economics, Medical Technology—Basic Course, and Physical Science lead to the degree of Associate in Science.

Columbian College offers the work of the junior and senior years of the four-year college program in the liberal arts and sciences leading to the degrees of Bachelor of Arts and Bachelor of Science. It also offers the studies leading to the degrees of Master of Arts and Master of Science in the fields of the liberal arts and sciences.

The Graduate Council offers a program of advanced study and research leading to the degree of Doctor of Philosophy.

The School of Medicine offers work leading to the degree of Doctor of Medicine.

The Law School offers professional and graduate courses leading to the degrees of Bachelor of Laws, Juris Doctor, Master of Laws, Master of Comparative Law, and Doctor of Juridical Science.

The School of Engineering offers courses leading to the degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering, Master of Science in Engineering, and Master of Engineering Administration.

The School of Pharmacy offers courses leading to the degrees of Bachelor of Science in Pharmacy and Master of Science in Pharmacy.

The School of Education offers undergraduate programs leading to the degrees of Bachelor of Arts in Education, Bachelor of Science in Home Economics, and Bachelor of Science in Physical Education, and graduate studies leading to the degrees of Master of Arts in Education and Doctor of Education.

The School of Government offers undergraduate programs of study in Foreign Affairs, Public Affairs, Accounting, Business Administration, and Statistics, leading to the degree of Bachelor of Arts in Government. Graduate work is offered leading to the following degrees: Master of Arts in Government in the fields of Foreign Affairs, Public Affairs, Economic Policy, Accounting, Business and Economic Statistics, and Counseling; Master of Arts in Public Administration; Master of Arts in Personnel Administration; Master of Business Administration; and Doctor of Business Administration.

The College of General Studies supplements the adult education program of the University through its Off-Campus Division, Campus Division, and Division of Community Services.

The Division of University Students makes available courses for mature students, not candidates for degrees in this University.

The Division of Special Students makes available courses for students in the process of qualifying for degree candidacy.

The Division of Air Science offers a program of Air Force ROTC training which is integrated with the curricula of the colleges and schools of the University and leads to appointment as a commissioned officer in the United States Air Force Reserve.

The Summer Sessions.

ACADEMIC STATUS

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another. The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The School of Engineering is on the accredited list of the Engineers' Council for Professional Development.

LOCATION

The George Washington University is in downtown Washington four blocks west of the White House and east of the Potomac River with its extensive parkway. Readily accessible to the University are many of the departments of the Government, including the Department of State, the Department of the Treasury, the Department of Justice, the Department of the Army, the Department of the Navy, the Department of the Interior, the Department of Agriculture, the Department of Commerce, and the Department of Labor, as well as the National Archives, the Capitol, the Library of Congress, the National Academy of Sciences, the Pan American Union, the National Gallery of Art, and the Corcoran Gallery of Art.

GOVERNMENT

The government and general educational management of The George Washington University are vested in a self-perpetuating Board of Trustees, with the President of the University as a member ex officio. The members of the Board are named for a period of three years and are divided into three classes. The members of one class are elected at each annual meeting to fill the places of the members whose terms of office expire. Two members of each class are nominated by the Alumni Association.

THE SCHOOL OF ENGINEERING

1958–59

THE SCHOOL OF ENGINEERING

THE FACULTY AND STAFF OF INSTRUCTION*

MARTIN ALEXANDER MASON, B.S. in Eng., Ing.-Dr., *Dean of the School of Engineering*

CARL HUGO WALTHER, B.E., M.C.E., *Assistant Dean in the School of Engineering*

JACK EDWARD WALTERS, M.S. in M.E., Ph.D., *Director, Engineering Administration Program*

GEORGE ABRAHAM, M.S.
Lecturer in Electrical Engineering

WILLIAM ALDERSON, M.S. IN E.E.
Lecturer in Electrical Engineering

NORMAN BRUCE AMES, LL.B., E.E., M.S. IN E.E., DR. SC. TECHN.
Professor of Electrical Engineering

WILLIAM WALTER BALWANZ, B.E.E., M.S. IN E.E.
Lecturer in Electrical Engineering

RAPHAEL DAVID CAHN, B.M.E.
Lecturer in Mechanical Engineering

GLEN DARWIN CAMP, PH.D.
Professor of Operations Research

BURTON BRYANT CHANDLER, M.B.A.
Professorial Lecturer in Engineering Administration

KENNETH SEYMOUR COLMEN, B.A.E., PH.D.
Professorial Lecturer in Engineering Administration

PAUL ARTHUR CRAFTON, B.M.E., PH.D.
Associate Professor of Mechanical Engineering

BENJAMIN CARPENTER CRUICKSHANKS, B.S. IN M.E.
Professor of Mechanical Engineering, Executive Officer of the Department of Mechanical Engineering

ROBERT CHARLES DEHART, M.S. IN C.E., PH.D.
Lecturer in Civil Engineering

LOUIS DEPIAN, PH.D.
Associate Professor of Electrical Engineering

FREDERICK CHARLES DYER, M.B.A.
Professorial Lecturer in Engineering Administration

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*The Staff of Instruction listed here is for the academic year 1957–58.
The President of the University, the Dean of Faculties, the Dean and the Assistant Dean of the School, the Registrar of the University, the Director of Admissions of the University, the Professors, Associate Professors, Assistant Professors, and Instructors constitute the Faculty.

RAYMOND PUGH EYMAN, C.E.
Associate Professor of Civil Engineering

ERNEST FRANK, B.E.E., M.S. in E.E., Ph.D.
Associate Professor of Electrical Engineering, Executive Officer of the Department of Electrical Engineering

RALPH EDWARD FUHRMAN, B.S. in C.E., M.S. in Eng., D.Eng.
Professorial Lecturer in Civil Engineering

MARTIN GARSTENS, M.S., Sc.D.
Lecturer in Engineering

SHELTON MANN GAY, Jr., M.S.
Lecturer in Civil Engineering

WILLIAM HERBERT GOSSARD, A.B., M.S. in E.E.
Lecturer in Electrical Engineering

NELSON THOMAS GRISAMORE, Ph.D.
Assistant Professor of Electrical Engineering

JOSEPH ELIAS GUIDRY, B.E., M.S. in E.E.
Lecturer in Electrical Engineering

FRANKLIN PORTER HALL, Ph.D.
Professorial Lecturer in Engineering Administration

KEITH CYRIL HARDER, Ph.D.
Professorial Lecturer in Engineering Administration

ROLLAND LEE HARDY, B.S., B.S. in C.E., C.E.
Assistant Professor of Civil Engineering

FOREST KLAIRE HARRIS, Ph.D.
Professorial Lecturer in Electrical Engineering

JAMES MILTON HEADRICK, M.S.
Lecturer in Electrical Engineering

ROBERT AARON HECHTMAN, M.S. in C.E., Ph.D.
Professor of Civil Engineering, Executive Officer of the Department of Civil Engineering

JOSEPH LAMBERT INTERMAGGIO, M.R.P.
Lecturer in Civil Engineering

GILBERT CHESTER JACOBUS, B.S. in C.E., M.B.A., LL.B.
Professorial Lecturer in Engineering Administration

JOHN KAYE, M.S. in M.E.
Associate Professor of Engineering Administration

IRVING KOROBKIN, B.M.E., M.S. in M.E.
Lecturer in Mechanical Engineering

GERSHON KULIN, M.S., Sc.D.
Lecturer in Civil Engineering

ROBERT STEVEN LEDLEY, D.D.S., A.M.
Assistant Professor of Electrical Engineering

THOMAS PHILLIP LIVERMAN, PH.D.
Professorial Lecturer in Electrical Engineering

ALVIN LOEWER, JR., B.E., DR.ENG.
Professorial Lecturer in Civil Engineering

KERMIT MILTON LOVEWELL, B.S. IN E.E.
Lecturer in Electrical Engineering

MARTIN ALEXANDER MASON, B.S. IN ENG., ING.-DR.
Professor of Civil Engineering; Dean of the School of Engineering

NEELY FORSYTHE JONES MATTHEWS, B.S.E.
Instructor in Electrical Engineering

FLORENCE MARIE MEARS, PH.D.
Professor of Mathematics

MELVIN RAYMOND MEYERSON, M.S. IN MET.E.
Professorial Lecturer in Civil Engineering

HAROLD JEFFERSON MILLS, JR., M.B.A.
Associate Professor of Engineering Administration

*ROBERT HAMILTON MOORE, PH.D.
Associate Professor of English Composition

PHILIP SIDNEY MORGAN, JR., B.S., M.S. IN M.E.
Assistant Professor of Mechanical Engineering

ALBERT CHRISTIAN MURDAUGH, M.S. IN MET.E.
Assistant Professor of Mechanical Engineering

CHARLES RUDOLPH NAESER, PH.D.
Professor of Chemistry

GEORGE JOSEPH O'HARA, M.S. IN C.E.
Lecturer in Civil Engineering

GEORGE PIDA, B.E.E.
Lecturer in Electrical Engineering

ROBERT WILLIAM PINNES, M.M.E.
Lecturer in Mechanical Engineering

FRANK JOSEPH POWELL, M.S.
Lecturer in Mechanical Engineering

FRANK MILLER REYNOLDS, LL.M., B.S.
Professorial Lecturer in Engineering Administration

DERRILL CONWAY ROHLFS, B.E.E.
Associate in Electrical Engineering

LOUIS SAMUEL ROTOLO, B.S. IN E.E.
Associate in Electrical Engineering

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* On sabbatical leave spring semester 1957–58.

LLEWELLYN ADAM RUBIN, B.S. in E.E.
Instructor in Electrical Engineering

SHELDON NORMAN SALZMAN, M.S.
Lecturer in Civil Engineering

ROBERT IRVING SARBACHER, Sc.D., E.E.
Professorial Lecturer in Electrical Engineering

PETER HANS SAWITZ, M.S. in E.E.
Lecturer in Electrical Engineering

WILLIAM COURTNEY SCHNOBRICH, M.S. in C.E.
Lecturer in Civil Engineering

DWIGHT EDWARD SHYTLE
Lecturer in Electrical Engineering

LEWIS SLACK, Ph.D.
Professor of Physics

ROBERT CHARLES SMITH, M.S. in M.E.
Lecturer in Civil Engineering

WALDO EDWARD SMITH, B.E. in C.E., M.S. in C.E.
Professorial Lecturer in Civil Engineering

NATHANIEL STEWART, M.S., Ed.D.
Professorial Lecturer in Engineering Administration

LEO SHANLEY STRAW, B.S. in C.E.
Associate in Mechanical Engineering

JAMES HENRY TAYLOR, Ph.D.
Professor of Mathematics

BOONE DOUDY TILLETT, LL.B., M.S., Sc.D.
Associate Professor of Engineering Administration

JACK EDWARD WALTERS, M.S. in M.E., Ph.D.
Professor of Engineering Administration; Director, Engineering Administratio
Program

CARL HUGO WALTHER, B.E., M.C.E.
Professor of Civil Engineering; Assistant Dean in the School of Engineering

GEORGE CALVIN WEAVER, M.S.
Associate Professor of Mechanical Engineering

DAVID GOVER WHITE, B.Chem. Eng., Ph.D.
Associate Professor of Chemistry

ROBERT JAMES WILSON, A.M., Ed.D.
Professorial Lecturer in Engineering Administration

THE ADVISORY COUNCIL

ALLEN VARLEY ASTIN, Ph.D.
Director of the National Bureau of Standards

LYMAN JAMES BRIGGS, Ph.D., Sc.D., LL.D.
Trustee of the University

HUGH LATIMER DRYDEN, PH.D., SC.D., D.ENG.
Director of Research of the National Advisory Committee for Aeronautics

RALPH LEON GOETZENBERGER, B.S., E.E.
Vice-President of the Minneapolis-Honeywell Regulator Company

DANIEL CHARLES WALSER, B.S.
Consulting Engineer; former *Chairman of the District of Columbia Board of Registration for Professional Engineers*

The Council is made up of friends of the University who are intimately familiar with the educational needs of the professional community served by the School. The Council is advisory to the Dean of the School of Engineering; it serves the function of relating the School to the educational requirements of the engineering and scientific constituency served by the School

ADMINISTRATIVE STAFF

Carolyn Fisk Hedin, *Secretary to the Dean*
Gladys Lacey, *Clerk-Typist*
Janet Cornelia Thayer, A.B. in Ed., *Clerk-Typist*
Mona Shirley Johnson, *Clerk-Typist*

COMMITTEES*

THE DEAN'S COUNCIL†

1959
Jack Edward Walters
Lewis Slack

1960
Ernest Frank
Paul Arthur Crafton

1961
Charles Rudolph Naeser
Robert Aaron Hechtman

COMMITTEE ON ADMISSION AND ADVANCED STANDING

Carl Hugo Walther, *Chairman*
Raymond Pugh Eyman
Nelson Thomas Grisamore
Philip Sidney Morgan, Jr.

COMMITTEE ON SCHOLARSHIP

Carl Hugo Walther, *Chairman*
Robert Aaron Hechtman
Ernest Frank
David Gover White

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* The Dean of the School and the Assistant Dean in the School of Engineering are members ex officio of all committees.

† Elected by the Faculty.

Committee on Graduate Studies

Ernest Frank, *Chairman*

James Henry Taylor	Robert Aaron Hechtman
John Kaye	Lewis Slack
Paul Arthur Crafton	Louis Depian
Keith Harder (Liaison Member)	Ronald J. Wylde (Liaison Member)

Committee on Research

Robert Aaron Hechtman, *Chairman*

Paul Arthur Crafton	Nelson Thomas Grisamore

GENERAL INFORMATION

INTRODUCTORY

The School of Engineering was organized October 1, 1884 as the Corcoran Scientific School of Columbian College and was situated in the University Building then at 15th and H Streets, NW. The school was named in honor of William W. Corcoran, Trustee and President of the Corporation from 1869 to 1888. Day and evening courses were offered in Literature, Science, and Technology and led to the degrees of Bachelor of Science, Civil Engineer, Mechanical Engineer, and Mining Engineer. The School was among the first to accept women for degree candidacy in engineering.

In 1902 the Corcoran Scientific School, the School of Graduate Studies, and the Columbian College were merged into a single Department of Arts and Sciences. Engineering degrees were made graduate in character and the student was required to hold a Bachelor of Science degree as a prerequisite to entrance. An indication of the developing character of the School is found in the entrance requirements which stated that "The candidate must give evidence he has completed a liberal undergraduate course—which was of such character as to fit him to pursue to advantage the study of advanced engineering subjects".

Administrative changes led to The Washington College of Engineering being initiated in 1905 as one of the several semi-independent undergraduate colleges of the University, each with its own Board of Trustees. The College provided instruction leading to undergraduate degrees in engineering and architecture.

In 1909 the name of the College was changed to the College of Engineering and Mechanic Arts, and the curricula were revised to give the student a thorough understanding of the theory underlying engineering practice. Emphasis was placed on the development of a knowledge of scientific principles upon which the student could build and by which he might solve new problems as they are met in practice.

The name of the school was changed again in 1914 to the College of Engineering and later to the School of Engineering. Architecture was dropped from the curriculum and degrees were limited to the field of engineering. However, the primary emphasis upon principles rather than technology which had characterized the School since 1902 was continued and has remained to this day as one of the important distinguishing features of the School.

The location of the School of Engineering in the nation's capital makes available a group of outstanding engineers and scientists as lecturers. It is traditional for the School to include these eminent professional specialists among the staff of instruction.

Since 1884 courses of instruction have been open to both men and women.

OBJECTIVE

The objective of the School of Engineering is to produce graduates who possess knowledge and understanding of the fundamental scientific principles in their fields of study; some skill in their application; and an attitude of responsibility toward society and the engineering profession.

PROGRAMS OF STUDY

Programs of undergraduate study are offered leading to the degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, and Bachelor of Science in Engineering (with optional areas of concentration).

Graduate work is offered under the supervision of the Committee on Graduate Studies, leading to the degrees of Master of Science in Engineering and Master of Engineering Administration.

HOURS OF INSTRUCTION

Courses of instruction are scheduled in the morning, afternoon, and evening. By taking the evening and summer classes and extending the time of study beyond the customary four years, a student who is able to give only part of his time to college work may complete a regular course and obtain a degree.

VETERANS EDUCATION

The Office of Veterans Education of The George Washington University operates as a service bureau for veterans interested in studying at the University and acts in a liaison capacity between the University and the Veterans Administration. Eligible persons are advised to consult this Office concerning the educational program of the University and the procedure for securing Veterans Administration educational benefits before applying to the Veterans Administration for certification. The Veterans Administration is on Constitution Avenue at Twentieth Street NW., Washington 25, D.C.

Public Law 634

(War Orphans Educational Assistance Act)

A child of a person who died of a disease or injury incurred or aggravated while on active duty in the Armed Forces during World War I, World War II, or the Korean Conflict may be eligible for educational assistance under this Act, if certain age requirements are met. In the case of a child who has not reached the age of majority, his guardian must make application for him to the Veterans Administration. For further information concerning eligibility or benefits available under this Law, consult the University Office of Veterans Education or the Veterans Administration.

Public Law 346

(World War II GI Bill)

The educational benefits for veterans under Public Law 346 terminated July 25, 1956, except as described below.

The Armed Forces Voluntary Recruitment Act of 1945 (Public Law 190) provided that persons enlisting or reenlisting in the Armed Forces between October 6, 1945, and October 5, 1946, may count the entire period of such enlistment or reenlistment as war service for purposes of GI Bill benefits. Such enlistees have four years from the date that enlistment ended to begin training and nine years from that separation date to complete training under this provision.

It is suggested that a veteran having any question regarding his eligibility consult the University Office of Veterans Education or the Veterans Administration.

Public Law 550

(Korean GI Bill)

In order to be eligible for the benefits under this Law, a veteran must have been in service between June 27, 1950 and January 31, 1955, and must no longer be on active duty.

At least thirty days prior to registration the veteran wishing to attend under this GI Bill should apply to the Veterans Administration for a Certificate for Education and Training, for presentation to the University Office of Veterans Education at the time of registration. A photostatic copy of his DD214 must accompany the original application for certification.

Public Laws 16 and 894

(Vocational Rehabilitation)

Disabled veterans desiring vocational rehabilitation under either Law should apply to the Veterans Administration for approval of their training objectives at least sixty days prior to registration.

Service School Credits

A limited amount of credit earned in service schools since 1941 may be considered for assignment to qualified degree candidates in accordance with faculty regulations of the Junior College, Columbian College, the School of Engineering, and the School of Government. To be considered for such credit, veterans should submit to the Director of Admissions photostatic copies of their service school records, indicating courses successfully completed with sufficient identification of the course to locate it in the Guide to Evaluation of Educational Experience in the Armed Forces.

AIR FORCE RESERVE OFFICERS' TRAINING CORPS

Eligibility Requirements

Enrollment in the Division of Air Science is open to all full-time men students and a limited number of women who are at least 14 years of age, citizens of the United States, physically fit, of good character, and candidates for Bachelor's degrees. Men and women enrolled in Air Force ROTC are designated Cadets and Cadettes, respectively. Cadets who successfully complete the basic course or have equivalent active military training may be selected to enter the advanced course. Cadets in the advanced course receive from the Government a subsistence allowance of approximately $500, which is exempt from income tax. During the period of summer training the advanced cadet receives, in addition, $75 a month, plus food, lodging, and travel expense. Uniforms, textbooks, and training materials are provided for all Air Science courses.

A cadet enrolling in the basic course must agree to successfully complete the two-year course as a prerequisite to graduation from the University. A cadet applying for enrollment in the advanced course must, if selected, sign a contract to complete the course as a prerequisite to graduation; attend a four- to six-week summer training unit; and fulfill all the obligations conjunctive with military service delay specified below.

A limited number of women may enter the advanced course and, upon successful completion thereof, may be considered for commissions as officers in the United States Air Force Reserve.

Military Service Delay

Deferment from induction under the Selective Service Act of 1951 may be granted to selected cadets within authorized quotas. Normally, a cadet is not considered for draft deferment until he has completed one semester's work in the University, with a quality-point index of at least 2.00. A cadet's deferment is subject to withdrawal if his quality-point index falls below 2.00.

The Air Force Reserve Officers' Training Corps (Air Force ROTC) unit was established at the University in 1951 under authority of Section 40-47C, National Defense Act of June 3, 1916, as amended. Air Force personnel, approved by the President of the University, are detailed by the Department of the Air Force to supervise and conduct the Air Force ROTC program.

The mission of the Air Force ROTC program is to select and prepare students through a permanent program of instruction to serve as commissioned officers in the Regular and Reserve components of the United States Air Force. Classroom instruction and leadership training are provided to develop in the student the knowledge and the attributes of character, personality, and leadership required of officers in the United States Air Force. Emphasis is placed on arousing in the student a desire to serve his country as a flying officer.

HEALTH ADMINISTRATION

The University maintains a health service that is primarily diagnostic in its intent. For medical emergencies and health consultations there is, on the Campus, a Student Health Clinic open from 9:00 A.M. to 5:00 P.M., with physician and nurse in attendance. There is also a rest room for women, with a graduate nurse in charge.

Medical privileges include: (1) the physical examination of every student entering from secondary school;* (2) three visits by the University physician or surgeon, office or residence (District of Columbia), in any one illness, exclusive of a specialist, surgical operation, laboratory, or X-ray examination; (3) hospitalization, including board and nursing in the University Hospital for not more than one week during any twelve month period—the necessity to be determined by the Director of Health Administration. The duration of hospitalization period (maximum, one week) is also to be determined by the Director of Health Administration.

This medical benefit does not apply to illness or disability incurred previous to the University term or prior to payment of tuition fees.

The student is allowed if he so desires, to engage physicians and nurses of his own choice, but when he does so he will be responsible for the fees charged.

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* A charge of $2 for a special physical examination is made by the University if a student fails to appear for a physical examination during the period set for the purpose.

Rules: (1) The Director of Health Administration is empowered to limit or deny the medical benefits where, in his discretion, a student has, by his misconduct or breach of the rules of the University, made himself ineligible; (2) the Director of Health Administration has authority to determine the necessity and length of hospitalization; (3) a student who has severed his connection with the University is ineligible for medical benefits; (4) a student intending to train for an athletic team is required to pass a thorough examination at the beginning of each semester; (5) the above regulations apply also during the summer term of the University.

The University is not responsible for injuries received in intercollegiate or intramural games, or in any of the activities of the departments of physical education.

LIVING ACCOMMODATIONS

The University maintains four residence halls. Meals are served at the Student Union.

Admission to the University does not include a room reservation. A separate application for a room should be made well in advance (for the fall semester by May first, for the spring semester by January first). Forms for application, together with detailed information, may be obtained from the Director of Activities for Women or the Director of Activities for Men.

Information concerning private rooming and boarding facilities near the University, for women students twenty-one years of age or older and for men students, may be obtained at the Housing Office, Lisner Auditorium. The reservation of rooms in private houses must be made by students.

Girls under the age of twenty-one who are enrolled for twelve or more semester hours of academic work in the University and who are not living with their parents or relatives may live outside the dormitories only with the permission and approval of the Director of Activities for Women, upon receipt of written requests from parents. In no case will permission be granted for such girls to be domiciled outside the dormitories except with persons approved by the Director of Activities for Women.

Women Students—The Hattie M. Strong Residence Hall provides single rooms at $38 a month and double rooms at $33 a month a person. The Dolly Madison Residence Hall provides double rooms at $33 a month a person.

Men Students—Welling Hall provides double rooms for $30 a month a person.

The John Quincy Adams Residence Hall provides 70 double rooms each with study alcove and bath. Rooms rent for $37.50 a month a person.

RELIGIOUS LIFE

The University recognizes the contribution that religion can make to the education of its students by encouraging them to participate in denominational clubs of their own choice. National Catholic, Jewish, and Protestant bodies sponsor these religious organizations, which act as links between the University and the local churches. The Director of the University Chapel and the advisers to the various denominational organizations are available throughout the year for consultation on personal problems.

UNIVERSITY CHAPEL

The University Chapel is maintained as a nonsectarian expression of the faith of the University in the contribution that religion can make to the education of its students. Twenty-minute services are held Wednesday of each week at 12:10 P.M. Representative clergymen of Washington are guest speakers at these nondenominational services.

THE PLACEMENT OFFICE

The Placement Office, 2114 G Street NW., provides assistance to students and alumni seeking full-time or part-time, temporary or permanent employment. The Office maintains a registry of positions available in many fields, both locally and nationally, and refers qualified applicants for consideration.

Students and alumni interested in placement are asked to register in person at the Office and to select from written descriptions of current openings positions for which they wish referral. Those interested in planning careers are invited to study the information on career fields and the brochures of business and industrial organizations, government agencies, etc., which are on display in advance of campus visits by recruiting officers. The services of the Counseling Center are available to students and alumni wishing career guidance.

The Placement Office is open from 9:00 A.M. to 5:00 P.M., Monday through Friday. Interviews for referral are held from 9:00 A.M. to 1:00 P.M.

THE TESTING AND COUNSELING CENTER

The Testing and Counseling Center, 718 Twenty-first Street NW., offers services which are available to students enrolled in the University, to high school students, and to adults of the community.

The services are designed to: assist individuals in the evaluation of their educational and vocational potentialities and objectives; diagnose academic difficulties; provide educational and vocational literature and information; and refer individuals to qualified agencies for assistance with problems not handled by the Center.

The Center provides special testing services including: diagnostic tests prescribed by the School of Engineering, admissions tests for the University and for other educational institutions, and tests for business and industry.

Fees.—Except for specialized testing, the fee covers testing and counseling based on the results of the tests. For students currently enrolled in the University, the fee is $7.50; for former students and community clients under twenty-one years of age, $30; for community clients over twenty-one, $45. Fees for specialized testing are dependent upon the services involved. All fees are payable at the Office of the Center.

STUDENT UNION

The Student Union, 2125 G Street NW., is the center for student life. From the cafeteria on the first floor to the reading room on the fourth floor, it is well planned to meet the students' need for meals, study, recreation, and activities. In addition to the recreation lounge and social lounge the Student Union provides office space for the Student Council and for the other major student organizations.

The Student Activities Office, also in the Student Union, has available information concerning the student organizations and campus events.

DAVIS-HODGKINS HOUSE

The Davis-Hodgkins House, 731 Twenty-second Street NW., is the engineering student center, providing lounges, reading rooms, and student organization offices. The House provides convenient, comfortable facilities for the exchange of ideas and good fellowship among student engineers.

INTERNATIONAL HOUSE

The International House, 2116 G Street NW., is the social center for students from foreign countries. A series of teas, dances, and other forms of entertainment, and the use of club rooms and lounge enable students to become acquainted and feel at home in the University.

The International Students Society welcomes as members students from other lands as well as North American students.

The Adviser to Students from Foreign Countries, whose office is in International House, is available for advice and guidance.

STUDENT ACTIVITIES

Directors of Student Activities

The University maintains the offices of the Director of Activities for Men and the Director of Activities for Women, for the guidance of students in all nonacademic phases of student life, such as, student activities, social life, and housing. The directors are available for individual counseling concerning personal adjustment to university life.

Student Government

Student Council.—The University believes in developing the civic responsibilities of its students by delegating to them such authority in student activities as is consistent with established policy and regulations. To this end, the organization of the University includes the Student Council, which, under the guidance of the Directors of Student Activities, is responsible for the conduct of all student activities. The Student Council is elected annually by the student body.

Committee on Student Life.—The Committee on Student Life is the judicial branch of the student government. It is composed of not more than seven members of the faculty, two of whom are the Director of Activities for Men and the Director of Activities for Women, appointed by the President of the University, and the following members: President of Student Council, an Editor of the *Hatchet,* President of Mortar Board, President of Omicron Delta Kappa, President of the Interfraternity Council, and President of Panhellenic Council. This Committee has the power to review the acts of all student organizations, including the Student Council, and set aside acts that are contrary to established policy and regulations of the University or the Committee.

Approval of Student Organizations.—This Committee is granted authority to approve or disapprove the establishment of any proposed organization on campus. No student club or society (except social fraternities, sororities, scholastic honor societies, religious or professional clubs or societies) organized as a branch or affiliate of a non-George Washington University organization will be recognized by the Committee on Student Life.

Eligibility for Student Activities

Any student registered in The George Washington University is eligible to participate in nonathletic student activities of the University; however, a student having a scholastic average of less than 2.00 is not eligible to be:

1. A member of the Dance Production groups, Glee Club, Cheerleaders, Student Council, Religious Council, Panhellenic Council, Interfraternity Council, Engineers' Council, Student Life Committee, or any publications staff

2. An officer, permanent committee chairman, or member of the executive board of any activity.

The rules and policies of the Southern Conference govern participation in intercollegiate athletics.

THE ENGINEERS' COUNCIL

The Engineers' Council is the student governing body for the School of Engineering, composed of two elected representatives from each year class and from the graduate student body, one representative from each student organization in the School, the Business Manager of the *Mecheleciv*, and the House Manager of the Davis-Hodgkins House. The purpose of the Council is to provide liaison between the student body of the School of Engineering and the Faculty, Administration, and Student Government of the University in all matters affecting the general interests and welfare of the student body, the School of Engineering, or the University. The Council is maintained financially by the Engineers' Council Fee paid by each student in the School of Engineering, and sponsors the engineer student magazine, *Mecheleciv;* the Annual Engineers' Mixer, Engineers' Banquet and Ball, and the Annual Christmas Tree Ceremony in the University Yard. Council meetings are open to all students in the School of Engineering.

The Council acts as the directing body for *Mecheleciv,* the engineers' student magazine. The magazine is published six times a year and is sent free to all engineering students. It includes campus and alumni news, a calendar of events, news of the student organizations, and articles on engineering by students and faculty members. The magazine is published by a student Board of Editors and a volunteer student staff.

The control and administration of all student activities are outlined in a separate bulletin.

SPORTS ACTIVITIES

The University is a member of the Southern Conference and the National Collegiate Athletic Association. Its teams participate in intercollegiate contests in football, basketball, baseball, tennis, golf, rifle, sailing, and crew.

The University maintains a complete program of intramural sports for both men and women. The Intramural Council, Women's Athletic Association, and Intersorority Athletic Board, cooperate with the departments of Physical Education in conducting this University program and the informal extramural sports program.

Other sports activities include the Fencing Club, Sailing Association, and Rowing Club.

ARTS

The University offers an opportunity for interested students to participate in dance, drama, and music through the following organizations: Dance Production Groups I, II, III; University Dramatic Production Group; and University Glee Club. Each of these groups presents programs during the academic year.

With the cooperation of the Curator of Art, an annual student art exhibit is presented.

ANNUAL EVENTS

Colonial Program.—The Student Council sponsors a series of ten cultural programs to which all students are invited.

Recreation Program.—The Student Council and the Dance Production Groups arrange dances—square, folk, and social—at frequent intervals for all students.

Engineers' Mixers.—At the beginning of each semester the Engineers' Council sponsors an evening program of orientation, good fellowship, and entertainment to introduce new students.

Homecoming.—Scheduled about the middle of the Fall Semester, Homecoming is the primary festive period of the school year. It includes the annual Pep Rally and Variety Show, the homecoming football game, and the homecoming dance.

Christmas Tree Lighting.—Shortly before Christmas vacation, a tree, given and decorated by the School of Engineering, is lighted at a carol ceremony in the University Yard.

The Winter Weekend.—In true Mardi Gras spirit, this function includes a jazz concert and a masquerade ball.

The Activities Fair.—Early in the Spring Semester, all campus activities entertain the freshmen in the Lower Lounge of Lisner Auditorium, with exhibits and demonstrations. Here new students meet older students with similar interests.

Engineers' Banquet.—In the spring the Engineers' Council sponsors the Engineers' Banquet and Ball, a social event for students and alumni, featuring recognition of student achievements during the year.

Career Conference.—Under the sponsorship of the Student Council, guest speakers from many professions explore annually with students the potentialities of vocations available on graduation.

May Day.—This is the traditional time for the award of honors in student activities. Mortar Board and Omicron Delta Kappa announce and present their new members.

The Colonial Cruise.—An afternoon and evening cruise on the Potomac in the late spring. Students, alumni, and faculty picnic, dance, and engage in games and athletic contests.

STUDENT ORGANIZATIONS

Honor Societies

Sigma Xi.—A national scientific honor society, the purpose of which is to encourage original investigation in science pure and applied. Outstanding graduate students in the sciences are eligible for full membership, and undergraduates who have shown marked ability in research may be elected to associate membership.

Omicron Delta Kappa.—A national fraternity emphasizing leadership in extracurricular activities.

Order of Scarlet.—A service honorary society for sophomore and junior men.

Phi Eta Sigma.—A national fraternity, established to encourage and reward high scholarship and attainment, membership in which is limited to those freshman men who attain a scholastic average of at least 3.50.

Sigma Tau.—A national engineering fraternity, the purpose of which is to recognize scholarship and professional attainment.

Professional Organizations

American Society of Civil Engineers (Student Chapter).—Membership open to students who are candidates for a civil engineering degree or the degree of Bachelor of Science in Engineering.

American Institute of Electrical Engineers—Institute of Radio Engineers (Student Chapter).—Membership open to candidates for an electrical engineering degree.

American Society of Mechanical Engineers (Student Chapter).—Membership open to candidates for the degree of Bachelor of Mechanical Engineering.

Theta Tau (Gamma Beta Chapter).—A national professional (engineering) fraternity. Membership by invitation to outstanding students who have completed successfully at least the freshman year in the School of Engineering.

Social Fraternities

Sigma Chi, Kappa Sigma, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Phi Epsilon, Phi Alpha, Sigma Nu, Acacia, Tau Kappa Epsilon, Pi Kappa Alpha, Tau Epsilon Phi, Alpha Epsilon Pi, Delta Tau Delta, Kappa Alpha.

Social Sororities

Pi Beta Phi, Chi Omega, Sigma Kappa, Alpha Delta Pi, Delta Zeta, Kappa Delta, Phi Sigma Sigma, Zeta Tau Alpha, Kappa Kappa Gamma, Delta Gamma, Kappa Alpha Theta.

Religious Organizations

Baptist Student Union, B'nai B'rith Hillel Foundation, Canterbury Club, Christian Science Organization, Lutheran Student Association, Newman Club, Religious Council, Student Christian Fellowship, Wesley Club, Westminster Foundation.

Student Publications

Amicus Curiae (Law School publication), *The Cherry Tree* (the annual), *The University Hatchet* (weekly newspaper), *The George Washington Law Review, Mecheleciv* (engineers' publication), *The Percolator* (pharmaceutical publication).

Other Organizations

Alpha Theta Nu (scholarship winners), Big Sisters, Cheerleaders, Colonial Boosters, Current Events Club, Flying Sponsors, Interfraternity Council, Interfraternity Pledge Council, Inter-law Fraternity Council, International Relations Club, International Students' Society, Junior Panhellenic Association, Old Men, Senior Panhellenic Association, Strong Hall Council, Student Council, Student Legal Aid Society, Wandering Greeks.

ADMISSION

The School of Engineering accepts men and women.

Students may enter The School of Engineering at the beginning of the fall semester, the spring semester, or the Summer Sessions.

GENERAL ADMISSION REQUIREMENTS

The following factors are considered in determining the eligibility of an applicant for admission:

1. The adequacy of previous academic work as preparation for the course of study now contemplated—including quantity and quality of work and the standing of the institution in which it was done.

2. Results of specified tests, when prescribed by the Committee on Admissions.

3. The aptitude of the student for the course contemplated.

4. The character of the student.

The University reserves the right to refuse admission to any student who has a previous academic record of such grade as to create doubt of his ability to pursue college work successfully, or who, for any other reason, would not be a desirable student.

APPLICATION FOR ADMISSION

An applicant for admission must obtain from the Office of the Director of Admissions an application blank which he must fill out completely and return with the application fee of $5. A recent photograph, with signature, of the applicant must be attached to the blank.

Applications should be filed not later than July 1 for the fall semester, January 1 for the spring semester, and May 1 for the Summer Sessions.

An applicant from a secondary school must send the high school record form provided by the University to his high school principal with the request that the principal fill out the form and mail it *directly* to the Office of the Director of Admissions.

An applicant who has previously attended an institution of higher learning must request the registrar of that institution to mail directly to the Office of the Director of Admissions a transcript of his record. If he has attended more than one such institution he must request the registrar of each institution to send to the Office of the Director of Admissions a transcript of his record, *even though credits were not earned,* together with an honorable dismissal from the institution last attended.

The Graduate Record Examination administered by the Educational Testing Service, Princeton, New Jersey, is accepted as supplemental evidence of the applicant's educational attainment, and the appropriate report should accompany the application for admission whenever available.

METHODS OF ADMISSION

From Secondary Schools

An applicant from a secondary school may seek to qualify for admission by certificate or examination.

By Certificate

A certificate of graduation with a minimum of fifteen "units"* from an accredited secondary school and the recommendation from the principal of the secondary school that the applicant is prepared to undertake college work will be considered subject to the following conditions:

1. If the school is accredited by the regional accrediting association, the student must rank not lower than the fourth fifth of his class.
2. If the school is not listed by the regional accrediting association, but has been accredited by the state accrediting agency, the student must rank in the upper three fifths of his class.

By College Entrance Board Examinations

An applicant may qualify by passing satisfactorily College Entrance Board examinations as prescribed by the Director of Admissions. These examinations are given at a large number of examination centers throughout the United States, including Washington, D. C., on March 15, May 17, August 13, and December 6, 1958; and January 10, February 14, March 14, May 16, and August 12, 1959.

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*A unit represents a year's study in a secondary school subject, including in the aggregate not less than 120 sixty-minute periods of prepared classroom work.

Arrangements for the examinations should be made with the College Entrance Examination Board, Post Office Box 592, Princeton, New Jersey, not less than one month before the date of the examinations.

FROM HIGHER INSTITUTIONS *

An applicant for advanced standing may be considered for admission upon the presentation of satisfactory credentials from an accredited institution of higher learning. The student must be in good standing as to scholarship and conduct, and must be eligible to return to the previously attended institution in the semester for which he seeks admission to this University.

If the transcript of record from such an institution includes the record of his secondary school work, it is not necessary for the applicant to have forwarded a separate record directly from the principal of the secondary school. High school work is considered only as fulfilling entrance requirements; it is never credited toward advanced standing.

Properly certified courses taken at accredited colleges or universities may be applied toward a degree at this University, subject to the curriculum requirements and regulations of the school or college to which admission is sought. Work of low pass grade (such as *D* or the equivalent) will not be considered for transfer credit.

ENTRANCE REQUIREMENTS

FOR UNDERGRADUATE STUDY

For the Degrees of Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, Bachelor of Science in Engineering.—An acceptable certificate of graduation from an accredited secondary school, or the satisfactory passing of College Entrance Board examinations in secondary school subjects selected with the approval of the Director of Admissions is required.

Nine and one-half of the fifteen units required for entrance must be distributed as follows: three in English, two in algebra, one in plane geometry, one-half in plane trigonometry, one in physics or chemistry, and two in one foreign language or history. A graduate of an approved high school who does not offer for admission the particular subjects required for the engineering curriculum, but who does present not less than fifteen acceptable units, may be admitted on condition, if such deficiency in the distribution of units does not exceed two units.

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* The University reserves the right to refuse advance credit in whole or in part, or to allow it provisionally. Credit so given may be withdrawn for subsequent poor work.

Advanced standing may be granted for work successfully completed at accredited institutions of higher learning. Credit will be assigned by the School of Engineering to the extent that the work taken at previous institutions meets the requirements for the degree sought at this University, and subject to the general University regulations concerning satisfactory subsequent work.

For Graduate Study

For admission to graduate study the student must hold a Bachelor's degree from a recognized institution; satisfy the Committee on Graduate Studies of his capacity for productive work in the discipline; and give evidence of preparation which, in the opinion of the Committee, is adequate for graduate study in the field selected.

Applicants who have significant deficiencies in their preparation for graduate study may be admitted to the Division of Special Students to pursue prescribed programs on the undergraduate level. Completion of such programs with minimum grades of *B* will qualify them for admission as graduate students in the School of Engineering.

In some cases such undergraduate study may be carried on in addition to a limited graduate program. In no case may the undergraduate courses fulfill any part of the requirements for the graduate degree.

For Degree Candidacy

Application for admission to candidacy for a Master's degree must be made in writing to the Committee on Graduate Studies. To be accepted the applicant must have (1) been accepted for graduate study, (2) satisfactorily completed nine semester hours of graduate courses, and (3) give evidence of satisfactory personal and intellectual qualifications. In exceptional cases the requirement of nine semester hours of graduate courses may be reduced.

REGISTRATION

Before a student may be admitted to registration he must have satisfied the Office of the Director of Admissions that he is qualified to enter the University.

A student who has previously matriculated in the University, but who has not been in attendance during the semester prior to registration, should file an application for readmission in advance of registration.

Registration is for the semester unless otherwise indicated on the registration paper. No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in the School of Engineering and in another institution or another division of The George Washington University without the permission of the Dean. Allowance of credit for work done concurrently will be at the discretion of the Committee on Admission and Advanced Standing.

Registration in the University entitles each student to the following University privileges (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office; (3) the use of University library facilities, except as otherwise designated; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described under Health Administration, pages 22–23. These privileges, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

FEES AND FINANCIAL REGULATIONS

Application fee, charged each applicant for admission, nonrefundable	$5.00
Tuition Fees:	
For each semester hour* for which the student registers (except for courses in Departments of Instruction in the School of Engineering, for courses in the College of General Studies, and for work toward a Master's degree in Engineering)	18.00
For each semester hour for which the student registers for courses in Departments of Instruction in the School of Engineering	20.00
For the degree of Master of Engineering Administration:	
For work leading to and including the Comprehensive Examination †	660.00
For the degree of Master of Science in Engineering:	
For work leading to and including the Comprehensive Examination †	720.00
Graduation fee	25.00
Scholastic-aptitude test (when required for admission)	3.00
Graduate Record Examination fee (to cover two examinations), charged each candidate for a Bachelor's degree at the time of registration for the final semester	5.00
Late-registration fee, charged each student who fails to register within the designated period	5.00
Change fee, charged each student for each change in program involving one or more than one course	2.00
Withdrawal fee, charged each student who preregisters and withdraws prior to the regular registration	5.00

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* Payment of tuition for a Master's thesis entitles the candidate, during the academic year of registration, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. If the preparation of the thesis extends beyond the second academic year, it must be registered for again, and tuition paid on the same basis as for a repeated course.

† When a limited schedule is carried which extends the time of completion of the program of study to more than one year, the proportionate part of the charge may be fixed by the Treasurer.

Service fee, charged each student for late payment of tuition	2.00
Reinstatement fee, charged each student who is reinstated after suspension for delinquency in fees	5.00
Residence fee, charged each student wishing to maintain "in residence" status during any semester of absence from the University or after completion of tuition requirements	20.00
For special physical examination	2.00
Engineers' Council fee, charged each student in the School of Engineering for each semester or any part thereof except the summer term	1.50
For each examination to qualify for advanced standing and for each special examination	5.00
Laboratory checkout fee, charged each student in chemistry courses who fails to check out of the laboratory by the time set by the instructor	3.00
Transcript fee, charged for each transcript of record after the first	1.00

Additional Course Fees

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in three payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

PAYMENT OF FEES

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each semester are due and payable in advance at the time of registration.

In exceptional cases, subject to the approval of the Treasurer, the student may sign a contract for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One third at the time of registration; one third on November 3; one third on December 1.

Spring Semester.—One third at the time of registration; one third on March 2; one third on April 1.

A student who fails to meet payments when due, but who pays his fees on or before the fifteenth of the month in which payment is due, is charged a service fee of $2. A student who fails to meet payments by the fifteenth of the month in which payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of $5.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

WITHDRAWALS AND REFUNDS

Application for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean. Notification to an instructor is not an acceptable notice.

For regulations governing students in the School of Engineering concerning withdrawal without academic penalty, see page 46.

A student may not withdraw from either the basic course (2 years) or the advanced course (2 years) of the Air Force ROTC without the approval of the President of the University.

In authorized withdrawals and changes in schedules, financial adjustments will be made as follows:

Fall Semester.—Withdrawal dated on or before October 31, cancellation of two-thirds of tuition charges; withdrawal dated on or before November 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to November 30.

Spring Semester.—Withdrawal dated on or before February 28, cancellation of two-thirds of tuition charges; withdrawal dated on or before March 31, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to March 31.

In no case will a refund be made of the first third of the total tuition charges unless the registration is in advance and is cancelled before the regular registration day. In this case a withdrawal fee of $5 is charged and tuition fees refunded. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this payment be credited to another semester.

Any student in chemistry who fails to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a checkout fee in the amount of $3. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Any student enrolled in the Air Force ROTC who fails to turn in uniforms, equipment, and textbooks on separation from the Corps will be charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

SCHOLARSHIPS, PRIZES, FINANCIAL AID

SCHOLARSHIPS

Scholarships are awarded for the academic year unless otherwise specified and are credited in equal parts for each semester. Each holder must carry the full prescribed schedule during the period for which the scholarship is awarded. Except in the case of the School of Engineering Scholarships, the General Motors College Scholarship, the Eugene and Agnes E. Meyer Scholarships, the National League of Masonic Clubs Scholarship, the Student Activities Scholarships, and the Texaco Scholarship, the applicants must have established an academic record in courses at this institution, and should apply on prescribed forms which must be filed in the Office of the Chairman of the Committee on Scholarships not later than April 1 preceding the academic year for which the scholarship is to be awarded. Further information may be obtained from the Chairman of the Committee on Scholarships.

School of Engineering Scholarships.—Four scholarships are available each year in the School of Engineering to graduates of accredited secondary schools. The holders of these scholarships must carry a full program in the School of Engineering.

Each scholarship is a full-tuition scholarship but does not cover special fees. Each scholarship is for four academic years (summer work is not to be included), provided the holder thereof meets all academic and other standards of the University.

To retain a School of Engineering scholarship, an average of *B* and a satisfactory standard of deportment must be maintained. In case a student marries after the award is made, the scholarship is forfeited. If for any reason a holder of a School of Engineering scholarship resigns or is dropped from said scholarship, the scholarship remains unfilled.

Emma K. Carr Scholarships.—Six scholarships in the amount of $400 each and ten of $100 each, established in 1932 by Mrs. Emma K. Carr, are available to "young men (of the white race) for undergraduate or postgraduate work, considering character, capacity, and need".

Henry Harding Carter Scholarship.—This scholarship, in the amount of $500, established in 1896 by Mrs. Maria M. Carter in memory of her husband, Henry Harding Carter, is available to a deserving student who is preparing for the civil-engineering profession.

Maria M. Carter Scholarship.—This scholarship, in the amount of $100, established in 1871 by Mrs. Maria M. Carter, is available to a young man.

Isaac Davis Scholarship.—This scholarship, in the amount of $80, was established in 1869 by the Honorable Isaac Davis of Massachusetts. Nominations for the scholarship may be made "by the founder or his eldest lineal descendant". In case no such nomination is made, the scholarship is to be awarded by the University.

Henry Parsons Erwin Scholarship.—This scholarship, in the amount of $300, established in 1955 by Mrs. Helen B. Erwin as a memorial to her husband, Henry Parsons Erwin, a former Trustee of the University, is available for a student in Engineering.

General Motors College Scholarship.—This scholarship, established in 1955 by General Motors Corporation, is available for an incoming freshman student who is a citizen of the United States and demonstrates outstanding talent, high personal qualifications, and financial need. The amount of the award has been made flexible and will range from an honorary award of $200, up to an award of $2,000 per year, depending upon the demonstrated need of the individual. It is renewable for the four years of undergraduate work, provided the student continues to meet the high standards established for the holder of this award.

Hazelton Scholarship.—This scholarship, in the amount of $350, established in 1950 by the bequest of Lillie S. Hazelton, is awarded annually "for the use and assistance of needy and worthy students".

Eugene and Agnes E. Meyer Scholarships.—A scholarship fund, in the amount of $3,500, established in 1952 by the Eugene and Agnes E. Meyer Foundation, is available annually "to assist promising students or applicants in meeting the costs of furthering their education, with preferential consideration to children of persons who are employed in public service, including service in the armed forces or the judiciary."

David Spencer Scholarship.—This scholarship of $175, established in 1918 by Miss Louisa J. Spencer, is available under certain restrictions.

The Zonta Club of Washington, D. C., Scholarship.—This scholarship, in the amount of $300, offered by the Zonta Club of Washington, D. C., is available to a woman who is a senior or graduate student with special interest in a professional or business career.

THE COLUMBIAN WOMEN SCHOLARSHIP FUNDS

The Columbian Women Scholarships are awarded by the Scholarship Committee of the Columbian Women. Applications for these scholarships should be addressed to the Chairman of the Scholarship Committee, the Columbian Women, The George Washington University, Washington 6, D.C., not later than May 15 preceding the academic year for which the scholarship is to be awarded, or, in the case of award for the spring semester, not later than January 1.

PRIZES

Alpha Chi Sigma Prizes.—Alpha Pi Chapter of Alpha Chi Sigma Fraternity offers annually the following prizes:

A "Handbook on Chemistry and Physics" is awarded to each of the three students who carry at least eighteen semester hours during the freshman year and attain the highest averages in freshman chemistry.

The name and year of graduation of the student who has attained the highest quality-point index in courses in chemistry will be inscribed on a bronze plaque. The winner must have had at least sixteen hours of chemistry including the final semester at The George Washington University.

Willie E. Fitch Prize.—The Willie E. Fitch Prize of $75, established in 1883 by James E. Fitch, in memory of his son, is awarded annually to a senior student for the best examination in chemistry.

Martin Mahler Prize in Materials Testing.—This prize established in 1953 by Martin Mahler consists of a one-year membership in the American Society for Testing Materials and is awarded to the upper division or graduate student in engineering who submits the best reports on tests in the Materials Laboratories course with preference given to prestressed concrete tests.

Omicron Delta Kappa Prize.—Alpha Delta Circle of Omicron Delta Kappa Fraternity offers annually a plaque to be awarded to "that member of the senior class who throughout his course has done the most constructive work in the furtherance and upbuilding of the University student activities".

Phi Eta Sigma Prize.—The George Washington University Chapter of Phi Eta Sigma offers annually to the male student attaining the highest scholastic average in his first full semester of work, a choice book selected from the field of the recipient's major interest. The winner's name will be engraved on a plaque in the Office of the Dean of the Junior College.

Ruggles Prize.—The Ruggles Prize of $35, established by Professor William Ruggles in 1859, is awarded annually to a candidate for a baccalaureate degree for excellence in mathematics.

Sigma Kappa Prize.—Zeta Chapter of Sigma Kappa Sorority offers an annual prize of $10 to the student with the highest grade in the final examination in General Chemistry.

Sigma Tau Prize.—Xi Chapter of Sigma Tau Fraternity offers annually a medal to be awarded to that member of the freshman class in the School of Engineering who maintains the highest scholastic standing in the work of the entire year.

James MacBride Sterrett, Jr., Prize.—This prize, established in 1911 by Professor James MacBride Sterrett in memory of his son, consists of books awarded annually to that student who obtains the highest average in Physics 6, 7, and 8.

Theta Tau Activities Plaque.—Gamma Beta Chapter of Theta Tau Fraternity offers annually a plaque to be awarded to that member of the senior class who has the most outstanding record in activities in the School of Engineering during the entire period of his attendance.

Alexander Wilbourne Weddell Prize.—This prize of $350, established in 1923 by Mrs. Virginia Chase Weddell, is awarded annually to a candidate for a degree who writes the best essay on the subject of "the promotion of peace among the nations of the world". The prize essays shall become the property of the University and shall not be printed or published without the written consent of the University. The University reserves the right to withhold the award if no essay attaining the required degree of excellence is submitted.

MILITARY AWARDS

Society of American Military Engineers Gold Medal.—This medal offered by the Society of American Military Engineers, is awarded annually to selected Air Force ROTC cadets in the next-to-last year of their engineering course and in the last year of such course. Nominations are made jointly by the Professor of Air Science and the Dean of the School of Engineering, and final selection is made nationally by a board of three senior Air Force officers.

Armed Forces Communications and Electronics Association Gold Medal.—This medal, offered by the Armed Forces Communications and Electronics Association, are awarded annually to outstanding senior Air Force ROTC cadets majoring in Electrical Engineering who demonstrate outstanding qualities of military leadership and distinguish themselves either academically or by leadership in campus activities.

Air Force Association Silver ROTC Medal.—This medal, offered by the Air Force Association, is awarded annually to that cadet who, after completion of Air Force ROTC summer training, is judged to be the outstanding cadet among those who have indicated their intention to apply for flying training upon graduation.

Reserve Officers' Association Medals.—Gold, silver, and bronze medals, offered by the Reserve Officers' Association of the District of Columbia, are awarded annually to those cadets enrolled in Air Science III, II, and I, respectively, who receive the highest grades for the current year in the leadership and academic phases of the Air Force ROTC course.

Chicago Tribune Gold ROTC Medal.—This medal, offered by *The Chicago Tribune*, is awarded each semester to that cadet enrolled in Air Science IV who has made an outstanding contribution to the effectiveness of the Air Force ROTC program by demonstrating the highest ideals of leadership and scholastic excellence.

Chicago Tribune Silver ROTC Medal.—This medal, offered by *The Chicago Tribune*, is awarded each semester to that cadet of the Air Force ROTC Basic Course who has demonstrated outstanding leadership potential and who has maintained excellent scholastic standing in the University.

Sons of the American Revolution ROTC Medal.—This medal, offered by the District of Columbia Society, Sons of the American Revolution, is awarded annually to that freshman cadet of each Air Force ROTC flight who demonstrates to the maximum degree traits and qualities of good citizenship and meets the prescribed requirements established by the donor.

Unit Leadership Trophy.—This silver trophy, offered by Walter G. Bryte, Jr., Colonel, USAF (Retired), first Professor of Air Science at this University, is awarded annually to the Air Force ROTC flight adjudged best in a competitive review and inspection. The Cadet Commander of this flight is presented a set of engraved Second Lieutenant's insignia.

The Colonial Cadet Rifle Trophy.—This trophy, offered by Master Sergeant Jerome Gleason, USAF, first coach of the Air Force ROTC Rifle Team at this University, is awarded to that cadet who is judged to be the outstanding member of the rifle team.

Arnold Air Society Scroll.—This scroll, offered by the Carl Spaatz Squadron of the Arnold Air Society, is awarded annually to the outstanding cadet completing the basic course with a cumulative average of *B* or better in Air Force ROTC courses.

Pershing Rifles Gold, Silver, and Bronze Achievement Medals.—These medals are awarded annually by the National Headquarters to those Air Force ROTC cadets who are Pershing Riflemen and who are judged to be outstanding examples of the ideals of the Pershing Rifles.

Republic Aviation Award.—An engraved identification bracelet, offered by the Republic Aviation Corporation, is awarded annually to that cadet enrolled in Air Science III who, in competition, makes the most effective verbal presentation on the Air Power theme.

The Convair Award.—A Convair miniature airplane, offered by the Consolidated Vultee Aircraft Corporation is awarded annually to that cadet enrolled in Air Science II who achieves the highest cumulative grade in the basic course and who applies for flight training.

Reserve Officers' Association Junior Memberships.—Five junior memberships, offered by the Reserve Officers' Association of the District of Columbia, are awarded annually to the five Air Force ROTC cadets who obtain the highest grades in Air Science III.

National Rifle Association Club Champion Medal.—This medal, offered by the National Rifle Association, is awarded to a sophomore, junior, or senior member of the Air Force ROTC Rifle Team judged to be the outstanding member of the team based on marksmanship, participation in team matches, and contribution to the effectiveness of the team.

National Rifle Association Qualification Medals.—These medals, offered by the National Rifle Association, are awarded annually to members of the Air Force ROTC Rifle Team qualifying as Expert, Sharpshooter, or Marksman in indoor rifle firing.

Air Force ROTC Rifle Team Awards.—Trophies, plaques, and medals are awarded annually to Air Force ROTC Rifle Teams through successful competition in the following:

The Air Force ROTC Liaison Area Championship Matches
The Army and Area Intercollegiate and Interscholastic Matches

The Secretary of the Air Force ROTC Rifle Match
The William Randolph Hearst National ROTC Rifle Matches.

FINANCIAL AID

LOAN FUNDS

The following loan funds are available to students in the University in accordance with the qualifications placed thereon by the donors. Inquiries should be directed to the Office of the Treasurer.

University Loan Fund.—The Trustees of The George Washington University have established a loan fund of $10,000.

Henry Strong Educational Foundation.—The Henry Strong Educational Foundation, established at Chicago under the will of General Henry Strong, makes available a fund for loans to both men and women students under the age of twenty-five years.

For information concerning full- and part-time employment, see "The Placement Office", page 24.

REGULATIONS

A student enrolled in the School of Engineering is required to conform to the University regulations and to comply with the rules and regulations of the School of Engineering.

A student who withdraws or is suspended, or is otherwise absent from the University for one semester or more, may re-enter and continue his work only under the rules and regulations in force at the time of his return.

If a student knowingly makes a false statement or conceals material information on an application for admission, registration card, or any other University document, his registration may be canceled and he will be ineligible (except by special action of the Faculty) for subsequent registration in any unit of the University.

ATTENDANCE

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required. A student may be dropped from any course for undue absence.

A student who has been suspended, either for delinquency in payment of fees or for any other reason, is not permitted to attend classes during the period of suspension.

The student is expected to attend every meeting of the course in which he is registered, fully prepared to carry on the work required. The student is held responsible for all work in the course, and all absences must be excused before provision will be made for him to make up the work missed. Excuses for absences from examinations which have been announced in advance can be obtained only by making written application to the instructor in charge of the course.

AMOUNT OF WORK

A full-time undergraduate student who is not on probation may take not more than twenty semester hours. A student employed more than twenty-four hours a week, who is not on probation, may take not more than ten semester hours.

A student previously unemployed who accepts employment subsequent to registration or at any time during a semester is required to report that fact immediately to the Dean, in order that adjustments in schedule may be made, if necessary, to bring his program within the Faculty's limitations upon the amount of work to be carried by an employed student.

ADVISORY SYSTEM

Every student entering the School of Engineering as an undergraduate degree candidate is assigned a permanent Faculty adviser—for the purpose of guiding the educational career of the student, providing assistance in his professional development as an engineer, establishing close relations between the Faculty and the student, and furnishing counsel and advice in all phases of the academic career of the student.

Faculty advisers counsel students on their programs of study, the achievement and maintenance of satisfactory scholastic performance, professional development, extracurricular activity as part of the educational process; and assist the entering student in orientation in the engineering discipline. The adviser represents the student in all cases requiring Faculty action.

Students who have not completed 70 semester hours satisfactorily are required to obtain their advisers' approval of programs of study prior to registration.

A student who has not completed the course work specified for the freshman and sophomore years is required to consult his adviser when so directed by the Dean, and to follow the recommendations of his adviser in all academic matters. However, advisers may not deny a student entry into any course or activity to which he is entitled under the regulations of the School of Engineering. Students having junior or senior status are encouraged to consult their advisers. The Dean acts as temporary adviser to entering or transfer students pending assignment of their permanent advisers.

All students are encouraged to discuss college problems with their advisers or instructors at any time; and parents or guardians are invited to consult with the Dean and advisers, concerning any student problems.

Faculty advisers discharge their counseling duties in accordance with the high principles of their professional responsibility; however, the final responsibility for a student's action lies wholly with the student.

SCHOLARSHIP REQUIREMENTS

A student must maintain a quality-point index of at least 2.00 to be in good academic standing.

A student who fails to maintain the scholarship requirements of the School of Engineering may be dismissed from the University.

Grades

Grades are not given out by instructors but are mailed to the student through the office of the Registrar at the close of each semester. Upon request, a copy of the student's grades will be forwarded to his parent or guardian.

The following undergraduate grading system is used: excellent, *A*; good, *B*; average, *C*; passing, *D*; failing, *F*. Whenever a grade has not been assigned, the symbol *Inc.* (incomplete) or the symbol *W* (authorized withdrawal) will be recorded. The symbol *Inc.* indicates that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work of the course. An "incomplete" can not be made up after the lapse of one calendar year except by permission of the Faculty. Courses from which a student has withdrawn by proper authorization will be indicated by the symbol *W*. No student may repeat for grade a course in which he has received a grade of *D* or above, unless required to do so by the department concerned.

For graduate work, grades are indicated as "excellent", "satisfactory", "unsatisfactory".

Quality-Point Index

Quality points are computed from grades as follows: *A*, four points; *B*, three points; *C*, two points; *D*, one point; *F*, no points, for each semester hour for which the student has registered.

Scholarship is computed in terms of the quality-point index, obtained by dividing the number of quality points by the number of semester hours for which the student has registered, both based on the complete collegiate record. Courses marked *W* or *Inc.*, are not considered in determining the index, except that courses marked *Inc.* will be considered when a formal grade is recorded, or at the close of a calendar year, whichever occurs first. If an "incomplete" is not superseded by a proper grade within the allotted time, it is computed as zero quality points.

Grades in courses taken at another institution are not considered in computing the quality-point index. Grades in courses taken to satisfy entrance requirements and in physical education and secretarial studies courses are not considered in computing the quality-point index.

SCHOLARSHIP

In order to graduate, a student must have a quality-point index of at least 2.00 in all work taken at The George Washington University and accepted in the School of Engineering.

Mid-Semester Warning.—At the end of the seventh week of each semester, instructors report to the Dean the names of those students whose scholarship is tentatively deemed unsatisfactory. A warning notice is sent to the student and a copy to his adviser. A student who receives warning notices is required to consult his instructor and his adviser immediately.

The adviser may prescribe diagnostic tests and/or remedial study to be completed before the end of the current semester.

Probation.—A student whose quality-point index falls below 2.00 will be placed on probation. This probation will extend over the period in which the student attempts twelve semester hours of study. In certain circumstances the period of probation may be extended.

A student on probation is required to follow a program of study, including remedial studies if necessary, prescribed by the Committee on Scholarship. A student on probation may not hold office or participate in the activities of any student organization or represent the School in any student activity.

Suspension.—A student whose quality-point index is below 2.00 at the end of his probationary period will be suspended. A student whose quality-point index falls below 2.00, after he has once been removed from probation, will be suspended.

At the time of his suspension a student may apply to the Committee on Scholarship for guidance concerning his educational objectives.

A student suspended for poor scholarship may apply* to be readmitted in the semester or summer session which begins next after an interval of one year. To be considered for readmission he will be required to pass tests or examinations prescribed by the Committee on Admission and Advanced Standing. No advanced standing will be assigned for any course work taken during the period of suspension. A student readmitted after suspension will be on probation and will be required to raise his quality-point index to 2.00 within twelve semester hours of study, or be suspended. A student suspended twice for poor scholarship will not be readmitted.

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* Application for readmission should be made two months in advance to permit the taking and grading of readmission tests.

ACADEMIC DISHONESTY

Evidence of dishonesty on the part of any student will result in his suspension from the University upon the recommendation of the Dean's council.

A student found guilty of dishonesty will be deprived of credit for *all courses* in the semester during which the dishonest act occurs.

A student may apply * to be readmitted to the University in the semester or summer session which begins next after an interval of one year from the date of suspension. Action upon such application will be taken by the Dean's Council. The Dean's Council will recommend to the President that a student suspended twice for dishonesty will not be readmitted.

CHANGES IN PROGRAM OF STUDIES

A student may not change or drop courses or change his status to that of auditor except with the approval of the Dean of the School upon presentation of adequate reasons for such changes.

Change from one section to another of the same course or from one major subject to another within the School may be made with the approval of the Dean. All requirements specified in the course of study to which the change is made must be satisfied.

Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Applications for such change should be made on the proper form, obtainable in the Office of the Director of Admissions, where it should be filed.

Withdrawal from a course or from the University, *without academic or financial penalty,* requires the permission of the Dean. Permission to withdraw from the University will not be granted a student who has not a clear financial record.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance. (For regulations concerning the refund of fees on withdrawal from courses or from the University, see page 36.)

During the seven days following the first day of classes of a semester, additional courses may be added to the student's program with the approval of the instructor, the student's adviser, and the Dean.

During the thirty-five days following the first day of classes of a semester, courses may be dropped from a student's program, with the approval of the student's adviser and the Dean, and without academic penalty. Withdrawal from a course without the approval of the student's adviser entails a penalty of failure in the course.

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* Application for readmission should be made two months in advance to permit the taking and grading of readmission tests.

Withdrawal from a course or from the University, without academic penalty, may be authorized by the Dean at any time upon presentation of written evidence of extenuating circumstances.

Unauthorized withdrawal from a course at any time entails a penalty of failure in the course and financial responsibility for the full fee for the course.

HONORS LIST

The Faculty of the School of Engineering recognizes meritorious scholastic achievement by an Honors List, containing in alphabetical order the names of candidates for undergraduate degrees in engineering, whose scholastic achievement satisfies all of the following requirements:

1. The candidate's cumulative quality-point index is equal to or exceeds 3.00.
2. At least thirty semester hours of credit have been earned while a degree candidate in the School of Engineering.
3. At least fifteen (part-time student) or thirty (full-time student) semester hours of credit in an engineering degree curriculum have been earned in the two semesters immediately preceding the award.
4. No grade below *C* has been received during the qualifying period stated above.
5. No disciplinary action has been taken in respect to the student.

The Honors List is prepared at the end of the fall and spring semesters, and displayed in an appropriate public place in the School of Engineering. A notation is made on the student's record each time his name is included in an Honors List.

CREDIT

Credit toward a degree is given only after regular registration for and satisfactory completion of the required work of classes in the University, or upon the granting of advanced standing in accordance with the regulations of the School.

On request the Registrar will issue to the student a balance sheet showing the amount of work completed and the requirements, both quantitative and qualitative, remaining to be met for the degree.

TRANSCRIPTS OF RECORD

Official transcripts of student records will be forwarded on request to other institutions. Unofficial copies of records will be issued to the student on request. No charge is made for the first transcript; a fee of one dollar is charged for each one thereafter. No certificate of work done will be issued for a student who does not have a clear financial record.

Summer School Credit

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this University must first secure the written approval of the Dean. In no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

PHYSICAL EDUCATION REQUIREMENTS

Freshmen and sophomores in the School of Engineering are required to take Physical Education 1–2 and 11–12 unless (1) they are registered for less than 10 semester hours, or (2) regular employment during the day makes it necessary to attend classes during the evening hours, or (3) they are enrolled in the Air Force ROTC, or (4) they are veterans.

Any other exemptions will be granted only upon written petition which has been recommended by the physical education department concerned and approved by the Dean of the School.

A student entering the University with advanced standing is not exempt from the physical education requirements unless he has satisfactorily met the requirements elsewhere. Courses in military training are not accepted in satisfaction of these requirements.

The required medical and physical examinations, as specified by the departments of physical education, will be arranged at the time of registration.

USE OF CORRECT ENGLISH

Any student whose written or spoken English in any course whatever is deemed unsatisfactory may be reported by the instructor to the Dean's Council. The Council may assign supplementary work, without academic credit, varying in amount with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the Dean's Council.

GRADUATION REQUIREMENTS

To be recommended for graduation a student must have met the admission requirement of the School, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—Application for a degree should be filed in the Office of the Registrar at the time of registration for the last semester of the senior or final year.

Curriculum.—Curriculum requirements for the Bachelor's degrees are stated on pages 52–56; for the Master's degrees, on pages 58–59 and 59–60.

Graduate Record Examination.—All candidates for Bachelor's degrees are required to take two parts of the Graduate Record Examination in the University's institutional testing program. The examinations are conducted by the University twice a year: the Fall Testing Session (December 13, 1958), for seniors graduating in February, and the Spring Session (April 11, 1959) for those graduating in June or October. Dates of the examinations are announced in the *Schedule of Classes.*

Each senior required to take the Graduate Record Examination must register for it in the office of his dean when he registers for his final regular semester of study (excluding summer sessions). A $5 examination fee is payable at the time of registration.

Students will receive individual reports of test scores and may avail themselves of the regular transcript services of the Educational Testing Service. By special permission seniors who expect to graduate in June may take the Graduate Record Examination at the previous Fall Testing Session, so as to have transcripts available early in the year when applying for admission to graduate schools.

Residence.—For the Bachelor's degrees, a minimum of one year or thirty-six semester hours must be completed in residence. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Master's Problem.—A comprehensive problem submitted in partial satisfaction of requirements for a Master's degree must be presented in its final form to the Dean not later than the date specified in the University calendar. Three copies of the problem are required, one typewritten original and two legible and complete carbon copies. Detailed instructions for the styling of all Master's problems should be obtained from the Dean.

Accepted problems with accompanying drawings become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in the problem must be secured from the Dean.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation *in absentia* is approved by the Dean.

HONORS

With distinction.—The degree may be conferred "with distinction", at the discretion of the Faculty, if a student attains a quality-point index of 3.50 or higher on all work taken at this institution except that taken during the semester immediately preceding the granting of the degree. To be eligible for this honor a student must have completed at this institution at least one-half of the work required for the degree.

Special honors.—Special honors may be awarded by the Faculty to any member of the graduating class for outstanding achievement in the student's major field of work on recommendation of the major department, under the following regulations:

1. The student must have his candidacy for special honors approved by the faculty member representing the major department or field not later than the beginning of the senior year.

2. The student must meet such other conditions as may be set at the time his candidacy is approved.

3. No student will be awarded special honors unless he has a quality-point index of at least 3.00 on all work taken at this institution except that taken during the semester immediately preceding the granting of the degree.

4. To be eligible for honors a student must have completed at this institution at least one-half of the work required for the degree prior to the beginning of the semester immediately preceding the granting of the degree.

Military honors.—An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Cadet" if he (1) has completed Air Science III with an academic standing among the upper third of the students enrolled therein; (2) has an accumulative academic average of *B* or better; (3) possesses high moral character and definite aptitude for service in the Air Force; (4) has distinguished himself by demonstrated leadership through participation in recognized extracurricular activities and while in attendance at an Air Force ROTC Summer Training Unit. A "Distinguished Air Force ROTC Cadet" is authorized to wear a "Distinguished" badge centered above the right breast pocket of the uniform. He may submit an application for a regular commission in the United States Air Force, which is given final consideration upon his designation as a "Distinguished Air Force ROTC Graduate".

An Air Force ROTC cadet may be designated a "Distinguished Air Force ROTC Graduate" if he has (1) been designated a "Distinguished Air Force ROTC Cadet" and maintained the standards required of a "Distinguished Air Force ROTC Cadet" during the period between designation and graduation; (2) completed the Air Force ROTC Advanced Course; and (3) completed the requirements for the Bachelor's degree. A "Distinguished Air Force ROTC Graduate" will be presented with a certificate signed by the Commandant, Air Force ROTC, and, if he made application, will be considered for a regular commission in the United States Air Force.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

The loan period for most books available for home circulation is two weeks, with an additional two-week renewal. A fine of five cents will be charged for each day a book is overdue. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

HOURS

The University Library is open from 9:00 A.M. to 10:00 P.M. each class day (Saturday 9:00 A.M. to 5:00 P.M.), and from 2:00 to 6:00 P.M. on Sunday.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

THE BACHELOR'S DEGREES

The Bachelor's degrees are: Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Mechanical Engineering, and Bachelor of Science in Engineering.

The degree of Bachelor of Science in Engineering may be earned with any of the following options: Chemistry, Engineering Administration, Machine Computer, Mathematics, or Physics.

Curricula leading to the degrees of Bachelor of Civil Engineering, Bachelor of Mechanical Engineering, and Bachelor of Electrical Engineering are accredited by the Engineers' Council for Professional Development, the recognized accrediting body of the engineering profession.

CURRICULUM REQUIREMENTS

The satisfactory completion of one of the following curricula is required.

Physical Education is required of all students in the freshman and sophomore years. (See "Physical Education Requirements", page 48.)

Variations from the prescribed curricula may be made, with the permission of the Dean's Council. A student desiring to omit a required course and substitute another must make written application to the Dean presenting satisfactory reasons for the substitution; and written approval must be obtained before registration for the course.

A student who is absent from the University for one semester or more (except on national service leave) is required to satisfy the curriculum requirements existing at the time of his return.

FRESHMAN YEAR (FOR ALL ENGINEERING CURRICULA)		Semester Hours
Chem. 11–12	General Chemistry	8
*Eng. 1, 2	English Composition	6
Math. 12	Analytical Geometry	3
Math. 19	Differential Calculus	3
ME 3–4	Graphical Communication I and II	4
ME 5	Orientation and Engineering Problems	2
ME 6	Engineering Problems	2
Phys. Ed.	See page 48 for statement of requirement.	
†Phys. 6 and 7	General Physics	6
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 1–2 and 21–22 (6) for Physical Education 1–2 (2), and may postpone English 1–2 until sophomore year.

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* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both semesters of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A, for which credit will be given unless it is used to satisfy entrance requirements.

† The student who begins Physics with Physics 6 or 7, is subject to a qualifying examination. Credit will be given for Physics 5 if not used for entrance requirements.

SOPHOMORE YEAR (FOR ALL ENGINEERING CURRICULA)

		Semester Hours
CE 12	Surveying (for B.C.E. candidates only)	3
CE 21	Statics	3
CE 24	Strength of Materials	3
Econ. 1	Principles of Economics (for B.E.E. candidates only)	3
EE 11	Electric Circuits	3
EE 12	Electric Machinery	3
Math. 20	Integral Calculus	3
Math. 103	Calculus and Differential Equations	3
ME 14	Analytical Kinematics (for B.M.E. and B.S. in Eng. candidates only)	3
Phys. Ed.	See page 48 for statement of requirement.	
Phys. 8	General Physics	3
Phys. 55	Physical Measurements	3
Speech 1	Effective Speaking	3
*Elective	In humanities or social studies	6
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 11–12 and 51–52 (6) for Physical Education 11–12 (2), Speech 1 (3), and Elective (3).

Bachelor of Civil Engineering

JUNIOR YEAR

		Semester Hours
CE 121	Dynamics	3
CE 125	Engineering Materials	4
CE 132	Fluid Mechanics	3
CE 143–44	Structural Theory and Analysis I and II	8
EE 102	Engineering Electronics	3
Math. 112	Mathematics for Engineers and Scientists	3
ME 113	Theoretical Thermodynamics I	3
ME 118	Heat Transfer	3
*Elective	In humanities or social studies	4
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Elective (4).

SENIOR YEAR

		Semester Hours
CE 128	Substructures	3
CE 135	Hydraulic Engineering	3
CE 138	Sanitary Engineering	3
CE 145	Steel and Timber Structures	3
CE 146	Reinforced Concrete	3
CE 154	Structural Dynamics	3
CE 157	Advanced Strength of Materials	3
CE 163	Transportation Engineering	3

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* Credit is not given for courses elected in Physical Education or Secretarial Studies.

CE 168	Regional and Urban Planning	3
EA 211	Communication of Ideas	3
*Elective	In humanities or social studies	6
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Elective (3).

Bachelor of Electrical Engineering

JUNIOR YEAR

		Semester Hours
CE 121	Dynamics	3
EE 102	Engineering Electronics	3
EE 103	Electric and Magnetic Fields	3
EE 104	Field Analysis	3
EE 107	Steady-state Network Analysis	3
EE 111–12	Electrical Measurements	4
EE 113–14	Electric Power Laboratory	4
EE 118	Alternating-current Machinery	3
EE 122	Measurements and Electronics Laboratory	2
Math. 112	Mathematics for Engineers and Scientists	3
*Elective	In humanities or social studies	5
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Elective (3).

SENIOR YEAR

		Semester Hours
CE 132	Fluid Mechanics	3
EE 123	Communications and Electronics Laboratory	2
EE 124	Communications and High-frequency Laboratory	2
EE 127	General Network Analysis	3
EE 131	Electric Power Systems	3
EE 136	Electromagnetic Waves	3
EE 137	Electronic Circuits and Systems	3
EE 171	Digital Circuitry and Systems	3
EE 189–90	Proseminar in Electrical Engineering	2
ES 154	Automatic Control	4
ME 113	Theoretical Thermodynamics I	3
*Elective	Inhumanities or social studies	3
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Elective (3).

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* Credit is not given for courses elected in Physical Education or Secretarial Studies.

Bachelor of Mechanical Engineering

JUNIOR YEAR

		Semester Hours
CE 121	Dynamics	3
CE 125	Engineering Materials	4
CE 132	Fluid Mechanics	3
EE 102	Engineering Electronics	3
Math. 112	Mathematics for Engineers and Scientists	3
ME 113	Theoretical Thermodynamics I	3
ME 114	Theoretical Thermodynamics II	3
ME 118	Heat Transfer	3
ME 120	Physical Metallurgy	3
Phys. 191	Nuclear Reactors	3
*Elective	In humanities or social studies	5
	Total	36

ROTC.—Air Force ROTC students substitute Air Science 101–2 (6) for Elective (5).

SENIOR YEAR

		Semester Hours
CE 157	Advanced Strength of Materials	3
ME 123	Advanced Dynamics	3
ME 135–36	Heat Power Engineering	6
ME 139	Fluid Machinery	3
ME 143	Production Engineering	3
ME 146	Dynamics of Compressible Fluids	3
ME 148	Machine Analysis and Synthesis	3
ES 154	Automatic Control	4
*Elective	In humanities or social studies	6
	Total	34

ROTC.—Air Force ROTC students substitute Air Science 151–52 (6) for Elective (3).

Bachelor of Science in Engineering

JUNIOR AND SENIOR YEARS

		Semester Hours
CE 121	Dynamics	3
CE 125	Engineering Materials	4
CE 132	Fluid Mechanics	3
EE 103	Electric and Magnetic Fields	3
Math. 112	Mathematics for Engineers and Scientists	3
ME 113	Theoretical Thermodynamics I	3
ME 118	Heat Transfer	3
ME 120	Physical Metallurgy	3
Phys. 132	Electronics	3
	Total of required courses	28

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* Credit is not given for courses elected in Physical Education or Secretarial Studies.

Option	As approved by the Department of Option and by the Dean of the School of Engineering	30
*Elective	In humanities or social studies	12
	Total	70

ROTC.—Air Force ROTC students substitute Air Science 101–2 and 151–52 (12) for Elective (3) and Option course (3).

The Bachelor of Science in Engineering curriculum provides training in the basic physical principles employed in engineering and in engineering methods of analysis, and in addition, offers an opportunity for study in optional fields in which the student has special interest.

Optional study can be selected from the fields of Chemistry, Engineering Administration, Machine Computer, Mathematics, or Physics. The program of study in the option is formulated by the department concerned in conference with the student. The program, bearing the approval of the Executive Officer of the department concerned, must be submitted by the student to the Dean before the beginning of the junior year.

THE MASTER'S DEGREES

Upon the satisfactory completion of the appropriate graduate requirements, the degree of Master of Science in Engineering or Master of Engineering Administration is conferred.

Study for the Master's degree is based upon a faculty-student relationship in which the ability and needs of the individual student are important elements in determining the curriculum. Programs are not restricted to one department or to a single field or type of study. They may include special instruction by assigned members of the engineering faculty or approved courses offered in other colleges and schools of the University. The Committee on Graduate Studies has the responsibility for establishing each student's program and for providing for its direction.

ADVANCED STANDING

Graduate courses completed before admission to graduate study are not transferrable for degree credit. The Committee on Graduate Studies has the discretion, however, to consider them in establishing individualized programs. Course work to satisfy degree requirements in another school or college of the University may not be so applied in the School of Engineering.

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* Credit is not given for courses elected in Physical Education or Secretarial Studies.

Requirements for the Degrees

Residence

The candidate for a Master's degree must complete a minimum of one year of full-time study, or the equivalent in part-time study, under the direction of the Committee on Graduate Studies. A full-time student must complete all requirements for the degree within three years; a part-time student, within five years.

Scholarship

A minimum grade of "Satisfactory" is required in all courses. A student who makes one grade of "Unsatisfactory" may repeat the course once, or he may appeal to the Committee on Graduate Studies for guidance. A student who receives two or more grades of "Unsatisfactory" will not be permitted to enroll further in the School of Engineering until he demonstrates by examination, or as the Committee may direct, that his deficiencies in course work have been removed.

Master's Problem

The degree candidate must submit an acceptable Problem to demonstrate his ability to make independent use of the knowledge and discipline of thought acquired and developed by graduate study, and to furnish objective evidence of constructive power in a given field. Work of a suitable character for which the student has professional responsibility may be considered, whether done on or off campus, provided no significant amount of work is completed without faculty supervision.

Comprehensive Examination

To demonstrate substantial understanding of principles and methods of their use in the area of his interest, the student must pass a comprehensive examination, written, oral, or both, as prescribed by the Committee on Graduate Studies. This examination will not be taken until the candidate has successfully completed the prescribed program of study and submitted an acceptable Master's Problem.

THE DEGREE OF MASTER OF SCIENCE IN ENGINEERING

The objective of this discipline is a substantial comprehension of scientific principles and methods for their use, as applied in modern engineering. Increased understanding of engineering science and its use in solving engineering problems are sought, rather than a breadth of familiarity with applications and techniques.

A program of study consisting of at least twenty-four semester hours of graduate courses to prepare the candidate for his comprehensive examination is formulated from the following areas with particular attention to the individual student's needs and objectives. The program may provide for broad coverage in a variety of fields or may be designed to give some degree of specialization in a particular area, as determined by conference with the Committee at the time of admission to candidacy.

The level of the courses ordinarily requires as prerequisite the satisfactory completion of at least one undergraduate course in mathematics beyond the first course in ordinary differential equations and at least one in the area of the graduate course to be undertaken.

REQUIRED COURSES

Upon admission to graduate study, courses in the following areas must be taken prior to application for admission to candidacy for the degree: analysis of engineering systems, analytical mechanics, and a choice of one or two courses in the areas marked by an asterisk in the Fundamental Engineering group below.

PROGRAM OF STUDY

After admission to candidacy for the degree, the balance of the program may be arranged in consultation with the Committee on Graduate Studies from the following:

Basic

Mathematics.—Theory of functions of a complex variable, mathematical statistics, mathematical probability, vectors, tensors, matrices.

Physics.—Classical field theory, quantum mechanics, solid state physics, nuclear physics.

Applied Mathematics.—Numerical and graphical analysis, advanced mathematics for engineers.

Fundamental Engineering

*Automatic Control
*Elasticity
Elastic Stability
*Electric Networks
*Electromagnetic Fields
Electronics
*Fluid Dynamics
Gas Dynamics
Heat Transfer
Modulation and Noise
Nonlinear Mechanics
Plates and Shells
Plasticity
*Structural Theory
*Thermodynamics
*Transients

Elective

This group is comprised of courses offered occasionally in such areas as digital computers, high-speed aerodynamics, jet propulsion, potential theory, structural analysis, and transistors. In addition, graduate courses in areas not included in the Basic group offered by the departments of Mathematics, Statistics, Physics, and Chemistry may be taken for degree credit with the approval of the Committee. In general, work in areas which are characterized by a scientific discipline may be accepted in satisfaction of course requirements for the degree of Master of Science in Engineering.

THE DEGREE OF MASTER OF ENGINEERING ADMINISTRATION

The objective of this discipline is to develop an understanding of the principles and a competence in the practices of administration as applied to engineering and scientific activities. Knowledge and understanding are sought rather than mere familiarity with techniques.

A study program is prescribed for each candidate, in accordance with his preparation and objective, by the Committee on Graduate Studies or an assigned adviser. Programs are integrated sequences of courses.

The degree of Master of Engineering Administration is granted upon the successful completion of (1) thirty semester hours of graduate courses, including the written Master's Problem, and (2) the Comprehensive Examination.

Prerequisite to Admission to Candidacy

In addition to the requirements for admission to candidacy stated on page 33, the applicant must have a knowledge of the principles of human relations, the fundamentals of accounting, and the fundamentals of statistics. This requirement may be met (1) by the successful completion of the following undergraduate courses or an approved equivalent: Psychology 145 *Principles of Human Relations,* Accounting 3 *General Accounting,* Statistics 51 *Introduction to Business and Economic Statistics,* or (2) by demonstrating an acceptable knowledge acquired from experience in the subject fields.

Program of Study

The content of these courses is considered essential knowledge for every candidate for the degree of Master of Engineering Administration. The candidate is required to complete all of the courses except those in which he (1) has successfully completed graduate study or (2) can demonstrate to the Committee on Graduate Studies an acceptable knowledge of the course field.

		Semester Hours
EA 201	Engineering Administration I	3
EA 202	Engineering Administration II	3
EA 271	Operations Research	3
EA 290	Problems in Engineering Administration	3
EA 291	Master's Problem in Engineering Administration	3

The following courses provide knowledge in certain special areas of significance in engineering administration. The candidate is required to select at least one; it is preferable that he elect all three.

		Semester Hours
EA 251	Management of Research and Development	3
EA 252	Production and Maintenance Management	3
Stat. 262	Managerial Statistics and Quality Control	3

Elective

Courses are to be elected to provide a total of 30 semester hours for the program.

		Semester Hours
EA 191	Engineering Law	3
EA 205	Engineer and Society	3
EA 211	Communication of Ideas	3
EA 212	Methods and Materials of Professional Communication	3
EA 261	Economic Analysis in Engineering Planning	3
EA 263	Quantitative Techniques of Engineering Administration	3
EA 272	Problems in Operations Research	3
EA 273–74	Techniques of Operations Research	6
EA 295	Applied Research in Engineering Administration (arr.)	
EA 296	Research in Engineering Administration (arr.)	
Acct. 211–12	Managerial Accounting I and II	6
Acct. 293	Budget Preparation and Control	3
Bus. Adm. 250	Contract Administration	3
Geog. 271	Engineering Geography	3
Pub. Adm. 213	Administration in Government	3
Stat. 271–72	Statistical Information Theory	6
Elective	(To be selected from Engineering or the sciences), as approved by the Committee on Graduate Studies	3–6

COURSES OF INSTRUCTION

COURSES OF INSTRUCTION

On the following pages, under the alphabetically arranged names of the departments of instruction, are listed the courses of instruction offered in the School of Engineering. Also listed are courses offered by other schools and colleges of the University, but required or accepted as electives for the degrees in engineering. The courses as here listed are subject to some slight change. Students are referred to the *Schedule of Classes*, which is available prior to the opening of each semester, for the hourly scheduling of all courses of instruction.

The University reserves the right to withdraw any course announced.

Explanation of Course Numbers

The following system of numbering is used to identify courses.

Undergraduate courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. Courses numbered from 101 to 200 are planned for students in the junior and senior years.

Graduate courses.—Courses numbered from 201 to 300 are planned primarily for graduate students. They are open, with the approval of the Chairman of the Committee on Graduate Studies and the Dean, to qualified seniors.

Indication of the Amount of Credit

The number of semester hours given for the satisfactory completion of a course is, in most cases, indicated in parentheses after the name of the course. Thus, a year course giving three hours of credit each semester is marked (3–3), and a semester course giving three hours of credit is marked (3). A semester hour usually consists of the completion of one fifty-minute period of class work or of one laboratory period a week for one semester.

ENGINEERING

UNDERGRADUATE COURSES

Civil Engineering

12 *Surveying* (3)

Spring: lecture (2 hours), field work (3 hours)—evening and Saturday.

Principles, methods, and instruments used in making space measurements, including layout, elements of simple curves, coordinate system, and treatment of observational errors. Prerequisite: Mathematics 12, Mechanical Engineering 4. Surveying fee, $13.

21 *Statics* (3)

Fall—morning and evening.

Composition and resolution of forces in two and three dimensions; equilibrium; centroids, centers of gravity, moments of inertia; friction; analysis of trusses, frames, and cables; shear and bending moment in beams; virtual work. Prerequisite: Physics 6. Prerequisite or concurrent registration: Mathematics 20.

24 *Strength of Materials* (3)

Fall—evening; spring—morning and evening; summer 1958.

Development and application of principles necessary to analyze stresses in and deformation of simple machine and structural components, combined stresses, strain energy, buckling of columns and beams, design of simple members and joints, composite members. Prerequisite: Civil Engineering 21, Mathematics 20.

121 *Dynamics* (3)

Fall—morning and evening; spring—evening.

Kinematics; kinetic friction; translation, rotation, and plane motion of rigid bodies; work; energy; power; impulse; momentum; impact; simple vibrations. Prerequisite: Civil Engineering 21, Mathematics 20.

125 *Engineering Materials* (4)

Fall: lecture—morning and evening; laboratory—afternoon and evening.

Mechanical behavior of engineering materials; including mechanical testing, elasticity, plasticity, fracture, ductility, creep, and fatigue; elements of metallurgy and physics of metals. Prerequisite: Chemistry 12, Physics 8, Civil Engineering 24. Laboratory fee, $11.

128 *Substructures* (3)

1958–59 and alternate years: spring—afternoon; 1959–60 and alternate years: spring—evening.

A limited study of substructure materials including soils and rocks and their properties as foundation material; seepage; plastic equilibrium; lateral earth pressures, bearing capacity, and settlement; design of simple substructures. Prerequisite: Civil Engineering 125 and 144.

132 *Fluid Mechanics* (3)

Spring: lecture—morning and evening; laboratory—afternoon and evening.

Development of the fundamental principles of flow of viscous and ideal compressible and incompressible fluids; dimensional analysis and model theory; laboratory work emphasizes principles, analysis of tests, and systematic observations of phenomena. Prerequisite: Mathematics 103, Civil Engineering 121, Mechanical Engineering 113. Laboratory fee, $11.

135 *Hydraulic Engineering* (3)

Fall—evening.

Applied fluid mechanics, hydrology, principles of water conservation; introduction to flood control, water power, drainage and irrigation, canalization of rivers, multiple-purpose projects, and general development of water resources. Prerequisite: Civil Engineering 132.

138 *Sanitary Engineering* (3)

Spring—evening.

Collection, storage, purification, and distribution of water; sewerage systems and treatment of sewage. Prerequisite: Chemistry 12, Civil Engineering 135.

143–44 *Structural Theory and Analysis I-II* (4–4)

1958–59 and alternate years: academic year—afternoon; 1959–60 and alternate years: academic year—afternoon and evening.

Structural behavior of statically determinate and indeterminate beams, frames, and trusses, and the application of basic principles to their analysis; moving loads; structural laboratory including structural model analysis. Prerequisite or concurrent registration: Civil Engineering 125. Laboratory fee, $11 a semester.

145 *Steel and Timber Structures* (3)

1958–59 and alternate years: fall—evening; 1959–60 and alternate years: fall—afternoon.

Design of steel and timber buildings, bridges, and details; structural properties of steel and timber. Prerequisite: Civil Engineering 144.

146 *Reinforced Concrete* (3)

1958–59 and alternate years: spring—evening; 1959–60 and alternate years: spring—afternoon.

Theory and design of plain and reinforced concrete structures. Prerequisite: Civil Engineering 144.

153 *Structural Theory and Analysis III* (3)

1959–60 and alternate years: fall—evening.

Further treatment of statically indeterminate structures, introduction to plastic analysis, numerical and approximate methods of analysis. Prerequisite: Civil Engineering 144, Mathematics 103.

154 *Structural Dynamics* (3)

1958–59 and alternate years: spring—afternoon; 1959–60 and alternate years: spring—evening.

Theory of mechanical vibrations; vibrations in and dynamic loading on structures. Prerequisite: Civil Engineering 153 or 157.

157 *Advanced Strength of Materials* (3)

1958–59 and alternate years: fall—late afternoon; 1959–60 and alternate years: fall—evening.

Selected topics in mechanics of deformable bodies, including: stresses at a point, general flexure, bending of curved beams, torsion, stress concentration, limitations of theories of failure, thick tubes, energy methods, plates and shells, and deformations beyond the elastic limit. Prerequisite: Civil Engineering 125, Mathematics 112. Prerequisite or concurrent registration: Civil Engineering 144 or Mechanical Engineering 123.

163 *Transportation Engineering* (3)

Fall—evening.

Economics, location, construction, operation, and maintenance of transportation systems. Prerequisite: Civil Engineering 12, 125, senior standing.

168 *Regional and Urban Planning* (3)

Spring—evening.

Introduction to regional and urban planning with emphasis on requirements for transportation systems. Prerequisite: Civil Engineering 163.

195–96 *Problems in Civil Engineering* (arr.)

Academic year—as arranged.

Special problems approved by the Staff. Prerequisite: senior standing.

ELECTRICAL ENGINEERING

11 *Electric Circuits* (3)

Fall—morning and evening; spring—morning and evening.

Current, voltage, power, Kirchhoff's laws, steady-state mesh and node analysis, simple transients, matrices and determinants, network theorems, resonance, balanced polyphase circuits. Prerequisite: Physics 7. Prerequisite of concurrent registration: Mathematics 20.

12 *Electric Machinery* (3)

Spring—morning and evening; summer 1958.

Principles of electromechanical energy conversion, methods of machine analysis, theory of transformers, d-c and a-c machines. Prerequisite: Electrical Engineering 11.

102 *Engineering Electronics* (3)

Spring—morning and evening.

Introductory treatment of: physical concepts of electron-tube and semi-conductor devices, their electrical characteristics, and their use in electronic circuit applications. Linear and nonlinear methods of analysis. Prerequisite: Electrical Engineering 11, Mathematics 20.

103 *Electric and Magnetic Fields* (3)

Fall—morning and evening.

Introduction to vector analysis; basic concepts of electrostatics and magnetics. Analysis of resistance, capacitance, inductance, forces, magnetic circuits. Prerequisite: Electrical Engineering 12, Mathematics 103.

104 *Field Analysis* (3)

Spring—morning and evening.

Solid angle, method of images, vector potential, magnetic scalar potential, conformal mapping, solutions of Laplace's equation, field plotting, analogues. Particle motion in electric and magnetic fields. Introduction to Maxwell's equations. Prerequisite: Electrical Engineering 103. Prerequisite or concurrent registration: Mathematics 112.

107 *Steady-state Network Analysis* (3)

Fall—morning and evening.

Four-terminal networks, network theorems, resonance, filters, coupled circuits, transmission lines, Fourier series, matrices. Prerequisite: Electrical Engineering 11, Mathematics 103.

111 *Electrical Measurements* (2)

Fall—morning and evening.

Systems of units, theory of errors, d-c indicating instruments and galvanometer dynamics, precision measurement of voltage, current, and resistance. Prerequisite: Electrical Engineering 12, Mathematics 103.

112 *Electrical Measurements* (2)

Spring—morning and evening.

Theory of a-c indicating instruments, a-c bridges, waveforms, frequency measurements, measurement of power and energy. Prerequisite: Electrical Engineering 107, 111.

113 *Electric Power Laboratory* (2)

Fall—afternoon and evening.

Experiments in d-c circuits, instruments, and machines. Prerequisite: Electrical Engineering 12. Laboratory fee, $11.

114 *Electric Power Laboratory* (2)

Spring—morning and evening.

Experiments in a-c circuits, instruments, and machines. Prerequisite: Electrical Engineering 113. Laboratory fee, $11.

118 *Alternating-current Machinery* (3)

Spring—morning and evening.

Extended theory of transformers and a-c machines including single-phase and control-type machines; machine transients and dynamics. Prerequisite: Electrical Engineering 12, 103, and 107.

122 *Measurements and Electronics Laboratory* (2)

Spring—afternoon and evening.

Experiments with d-c measuring instruments, oscilloscopes, and impedance bridges; characteristics of electronic devices and simple amplifiers. Prerequisite: Electrical Engineering 111. Prerequisite or concurrent registration: Electrical Engineering 102, 112. Laboratory fee, $11.

123 *Communications and Electronics Laboratory* (2)

Fall—afternoon and evening.

Theory and use of electronic devices and instruments. Experiments in networks, passive and active circuits, modulation, and detection. Prerequisite: Electrical Engineering 107, 112. Prerequisite or concurrent registration: Electrical Engineering 137. Laboratory fee, $11.

124 *Communications and High-frequency Laboratory* (2)

Spring—afternoon and evening.

Experiments at radio frequencies: impedance, amplifiers, lines, antennas. Experiments at microwave frequencies: waveguides, horns, slotted-line measurements of standing waves, and power. Prerequisite: Electrical Engineering 123. Prerequisite or concurrent registration: Electrical Engineering 136. Laboratory fee, $11.

127 *General Network Analysis* (3)

Fall—morning and evening.

Solutions of linear integro-differential equations using transformation calculus. Laplace transforms, Fourier integral, poles and zeros of network functions, correlation of time and frequency domains, one-terminal- and two-terminal-pair networks. Prerequisite: Electrical Engineering 107, Mathematics 112.

131 *Electric Power Systems* (3)

Fall—evening.

Theoretical analysis of power transmission including parameters, system stability and protection, with application of symmetrical-component theory. Prerequisite: Electrical Engineering 118.

136 *Electromagnetic Waves* (3)

Spring—morning and evening.

Electromagnetic waves in bounded media, radiation from antennas, high-frequency transmission lines, cavity resonators and microwave devices. Prerequisite: Electrical Engineering 104, Mathematics 112.

137 *Electronic Circuits and Systems* (3)

Fall—morning and evening.

Analysis of linear amplifiers, concepts of feedback and oscillators, amplitude and frequency modulation and detection, communication systems. Prerequisite: Electrical Engineering 102 or Physics 132, Electrical Engineering 107, Mathematics 112.

171 *Digital Circuitry and Systems* (3)

Fall—late afternoon.

Introduction to basic concepts of modern digital programmed systems, mathematical foundations and techniques for logical design of digital circuits, electronic design of computer circuits. Prerequisite: Mathematics 112, Electrical Engineering 102 or Physics 132.

172 *Digital Techniques* (3)

Spring—late afternoon.

Continuation of Electrical Engineering 171. Automatic programming techniques, information theory, self-detecting and correcting codes, advanced logical circuit design, electronic design of digital transistor and magnetic-core circuits, memory systems, analog-to-digital techniques, wiring diagrams. Prerequisite: Electrical Engineering 171.

174 *Digital Computer Laboratory* (2)

Spring—afternoon.

Theory and use of a digital computer: programming, operating, logical circuitry, design, troubleshooting. Prerequisite: Electrical Engineering 171. Laboratory fee, $11.

189–90 *Proseminar in Electrical Engineering* (1–1)

Academic year—late afternoon.

Oral and written presentation of technical and nontechnical papers by students, with group discussion and critical analysis. Prerequisite: senior status.

MECHANICAL ENGINEERING

3–4 *Graphical Communication I-II* (2–2)

Academic year—morning, afternoon, and evening.

Spatial visualization and drawing, perspective, free-hand drawing, views in space, schematic diagrams, curves and curve fitting, descriptive geometry. Drafting-room fee, $10 a semester.

5 *Orientation and Engineering Problems* (2)

Fall—morning, afternoon, and evening; spring—morning and evening.

Open to freshmen only. Orientation in college. Introduction to slide rule, engineering logic and ethics, engineering method of analysis, proper methods of study and work. Simple problems in engineering.

6 *Engineering Problems** (2)

Spring—morning and evening; summer 1958.

Simple engineering problems in statics, dynamics, energy, heat and electricity. Training in reasoning, engineering analysis, and application of mathematics to engineering problems. Prerequisite: Mechanical Engineering 5; removal of all entrance deficiencies in science and mathematics.

14 *Analytical Kinematics* (3)

Spring—morning and evening.

Analytical study of constrained motion of rigid bodies and their combinations; including bar linkages, cams, and gears. Prerequisite: Physics 6, Mechanical Engineering 4 and 6. Prerequisite or concurrent registration: Mathematics 103.

113 *Theoretical Thermodynamics I* (3)

Fall—morning and evening.

Fundamental concepts, equations of state, first and second laws of thermodynamics, entropy, single and two-phase mixtures. Prerequisite: Chemistry 12, Mathematics 20, Physics 8.

114 *Theoretical Thermodynamics II* (3)

1958–59 and alternate years: spring—evening; 1959–60 and alternate years: spring—morning and evening.

Vapor cycles, combustion, gas dynamics, equilibrium, multiphase mixtures. Prerequisite: Mechanical Engineering 113, Mathematics 112. Prerequisite or concurrent registration: Civil Engineering 132, Mechanical Engineering 118.

118 *Heat Transfer* (3)

Spring—morning and evening.

Heat transfer theory, conduction, convection, radiation, field and potential theory applied to conduction. Lecture and laboratory. Laboratory fee, $10. Prerequisite: Mechanical Engineering 113, Mathematics 112.

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* This course should be completed before the beginning of the sophomore year.

120 *Physical Metallurgy* (3)

1958–59 and alternate years: spring—morning; 1959–60 and alternate years: spring—evening.

Physics of metals, crystal and lattice structures, binary and ternary alloys, properties of alloys, nonequilibrium conditions, phase diagrams. Prerequisite: Mathematics 20, Civil Engineering 125.

123 *Advanced Dynamics* (3)

1958–59 and alternate years: fall—evening; 1959–60 and alternate years: fall—morning and evening.

Dynamics of a particle and systems of particles; dynamics of a system with constraints, vibration, shock; the gyroscope. Prerequisite: Mathematics 112, Civil Engineering 121, Electrical Engineering 11, Mechanical Engineering 14. Prerequisite or concurrent registration: Civil Engineering 157.

135–36 *Heat Power Engineering* (3–3)

1958–59 and alternate years: academic year—evening; 1959–60 and alternate years: academic year—morning and evening.

Analysis and design principles governing systems and components in heat-power, gas and vapor turbines, internal combustion engines, heat pumps, nuclear power systems. Lecture and laboratory. Laboratory fee, $15 a semester. Prerequisite: Physics 191, Civil Engineering 132, Mechanical Engineering 114, 118. Prerequisite or concurrent registration: Mechanical Engineering 139.

139 *Fluid Machinery* (3)

1958–59 and alternate years: fall—evening; 1959–60 and alternate years: fall—morning and evening.

Positive-displacement machines; hydraulic circuits and servomechanisms; general theory of dynamic machines; velocity diagrams and work transfer; radial, axial, and mixed-flow machines; torque converters and couplings; jet machines. Lecture and laboratory. Laboratory fee, $10. Prerequisite: Civil Engineering 132, Mechanical Engineering 113. Prerequisite or concurrent registration: Mechanical Engineering 125.

143 *Production Engineering* (3)

1958–59 and alternate years: fall—morning; 1959–60 and alternate years: fall—morning and evening.

Principles of production engineering, programming, production methods, quality control, automation, operations analysis. Prerequisite: Mechanical Engineering 14, 120; Mathematics 112.

146 *Dynamics of Compressible Fluids* (3)

1958–59 and alternate years: spring—evening; 1959–60 and alternate years: spring—morning.

Mathematical theory of compressible fluid flow, flow around immersed bodies, airfoil theory, shock-wave theory, thermodynamics of compressible fluids. Laboratory fee, $10. Prerequisite: Mechanical Engineering 118, Civil Engineering 132.

148 *Machine Analysis and Synthesis* (3)

1958–59 and alternate years: spring—morning; 1959–60 and alternate years: spring—evening.

Analysis and synthesis of machine components and of complete machines, relations of machine and system, applications of automatic control. Prerequisite: Electrical Engineering 12, Mechanical Engineering 123, 135, 139, 143. Prerequisite or concurrent registration: Engineering Science 154.

GRADUATE COURSES

Prerequisites for graduate courses are not listed explicitly. Instructors in individual courses will state prerequisites, and may recommend preparatory work to be completed prior to admission to the course.

Civil Engineering

224 *Plates and Shells* (3)

Fall—evening.

Pure bending of flat plates, laterally loaded flat plates, flat rectangular plates with various edge conditions, bending of flat plates under combined lateral and transverse loads, curved shells.

226 *Plasticity of Solids* (3)

1959–60 and alternate years: spring—evening.

Plastic flow and fracture of solids; theory of perfectly plastic solids, including basic concepts, plastic deformation of simple trusses and beams, and plane strain problems; theory of fracture.

251 *Theory of Structures* (3)

Fall—evening.

Classical and modern methods of structural analysis; basic theory of structures; statically indeterminate structures, including continuous beams and trusses, arches, and suspension bridges; limit-load analysis; special problems.

256 *Theory of Elastic Stability* (3)

1958–59 and alternate years: spring—evening.

Beam-column problems and methods of analysis (including numerical analysis); lateral buckling of beams; buckling of rigid frames, flat plates, stiffened flat plates, and shells; the pony truss; buckling of arches.

Electrical Engineering

205 *Electronic Circuit Analysis* (3)

Spring—evening.

Methods of linear and nonlinear analysis applied to passive and active networks including vacuum-tube and transistor circuits, and magnetic and dielectric amplifiers.

207 *Steady-state Network Analysis* (3)

Spring—evening.

Analysis of lumped, linear networks: determinants, loop and node analysis, network theorems, four-terminal networks, filters, complex frequency, network functions, and general network properties.

209 *Electromagnetic Field Analysis* (3)

Fall—evening.

Electrostatics, magnetics, and Maxwell's equations: solutions of Laplace's equation, retarded potentials, electromagnetic waves in bounded media, field analysis techniques.

211 *Physical Electronics* (3)

Fall—evening.

Thermionic emission, charged particle motion in electric and magnetic fields, physical analysis of diodes and triodes, space charge and potential distributions, electron optics, electronic principles of microwave tubes.

215 *Analysis of Modulation and Noise* (3)

Spring—evening.

Analysis by Fourier series and integrals of signals and linear networks, modulation and spectra, noise analysis including probability method of determining power spectra.

231 *Basic Concepts of Digital Computers* (3)

Fall—evening.

Historical survey of computers; arithmetic systems, computer logic, basic components of digital computers; selected topics in cybernetics, information theory, and logic.

ENGINEERING ADMINISTRATION

The School of Engineering offers the following courses primarily for candidates for the degree of Master of Engineering Administration. Other courses listed in this program are offered by the departments of Accounting, Business and Public Administration, Geography, Psychology, and Statistics.

191 *Engineering Law** (3)

Fall—evening.

The influence of contract, property, and tort law upon engineering activities. Legal principles relating to the organization and management of engineering companies and governmental departments; legal procedures of interest to engineers. Topics considered include contracts, agency, partnership, corporations, liens, and expert testimony.

201 *Engineering Administration I* (3)

Fall—evening; spring—evening; summer 1958.

Application of scientific method to the administrative processes of (1) planning and (2) organizing; including development of objectives, key factors in planning, basics of organization, stages of organizational growth, special problems of organization in an engineering or scientific enterprise, and management development.

202 *Engineering Administration II* (3)

Fall—evening; spring—evening.

Continuation of Engineering Administration 201. Application of scientific method to the administrative processes of (3) managing or directing and (4) evaluation and control. Study of delegation; decentralization; personnel relations; systems engineering; automation; financial analysis, budgeting, and administrative audits.

205 *Engineer and Society* (3)

Spring—evening.

Role of the engineer and the engineering profession in society; the influence of humanities in engineering and scientific activities; and the relationship of engineering to the community, state, nation, and the world. Case studies by the student are required.

211 *Communication of Ideas* (3)

Fall—evening.

The principles and practices of factual technical communication; reports, administrative memoranda, and articles for publication; the selection of content, and preparation of material for readers of different orientations and capabilities.

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* An undergraduate course which may be taken for graduate credit with approval of the Committee on Graduate Studies.

212 *Methods and Materials of Professional Communication* (3)

Spring—evening.

Effective use of materials in oral communication of professional ideas, covering: engineering, industry, and engineering-government relationship.

251 *Management of Research and Development* (3)

Fall—evening.

Management problems involved in the administration of research and development programs; exploration of techniques in programming, selection of organizations for research, maintenance, control, and evaluation of projects. Prerequisite: Engineering Administration 202, or permission of instructor.

252 *Production and Maintenance Management* (3)

Fall—evening; spring—evening.

Managerial implications of automation. Study of skills and abilities essential to industrial management, including maintenance of equipment and real property. Prerequisite: Engineering Administration 202, or permission of instructor.

261 *Economic Analysis in Engineering Planning* (3)

Fall—evening; spring—evening.

Application of economic principles to engineering administration: inputs, outputs, investments, and prices. Studies are made of the methods of analyzing economic factors in evaluating alternate courses of administrative action in government and industry.

263 *Quantitative Techniques of Engineering Administration* (3)

Not offered 1958–59.

Application of the various quantitative techniques, mathematical, statistical, and other management sciences' techniques to the analysis of engineering administration and the solution of administrative problems by the use of models, theories, and measurements.

271 *Operations Research* (3)

Fall—evening; spring—evening.

Background and application of operations research; history, characteristics, capabilities, administrative considerations, cases, methods, and techniques, including construction of conceptual and mathematical models.

272 *Problems in Operations Research* (3)

Spring—evening.

Illustrations of the application of operations research by study of case histories: examples of the formulation and preliminary order-of-magnitude case; examples of broader scope. Prerequisite: Engineering Administration 271, or permission of the instructor.

273–74 *Techniques of Operations Research* (3–3)

Academic year—evening.

Theory and application of techniques used in operations research, including order-of-magnitude estimation, probability and mathematical statistics, symbolic logic, inequality-constrained stationary-value problems, dynamics of populations, Monte Carlo simulation, strategic gaming, and error and sensitivity analysis. Prerequisite: Engineering Administration 271, or permission of the instructor.

290 *Problems in Engineering Administration* (3)

Fall—evening; spring—evening.

Application of the scientific method to engineering administrative problems; the selection and development of the Master's Problem.

291 *Master's Problem in Engineering Administration* (3)

Fall—evening; spring—evening.

Experimentation and proof of the Master's Problem solution. Preparation for presentation of the problem in written form.

295 *Applied Research in Engineering Administration* (arr.)

Fall—as arranged; spring—as arranged.

Application of established principles to new engineering administrative situations; the development of new knowledge of administration.

296 *Research in Engineering Administration* (arr.)

Fall—as arranged; spring—as arranged.

Creative thinking in engineering administration, initiation of new theories and principles, development of new hypotheses, experimentation, proof of theories and hypotheses.

Engineering Science

The following courses serve as foundations for specialization, since they are concerned with a body of knowledge applicable in a variety of engineering fields.

154 *Automatic Control*[*] (4)

Spring—morning and evening.

Theory of automatic control systems including electromechanical, pneumatic, and hydraulic systems. Transient analysis, transfer functions, stability criteria. Experimental study of automatic control systems. Prerequisites: Electrical Engineering 127 or Mechanical Engineering 123.

201 *Automatic Control* (3)

Fall—evening.

Advanced theory of measurement and control systems including: characteristic equations, transfer functions, system analysis, dynamic analogies, multiple-loop systems, and nonlinearities.

203 *Operational Analysis of Linear Systems* (3)

Fall—morning.

Transient analysis of linear, lumped-parameter electrical and mechanical systems by operational methods with emphasis on Laplace transforms.

211 *Analysis of Engineering Systems I* (3)

Fall—evening; spring—evening

Application of mathematical principles to physical systems in civil, electrical, and mechanical engineering. Mathematical methods are emphasized. Mathematical topics include: ordinary differential equations, partial differential equations, vectors, coordinate systems, orthogonal functions.

212 *Analysis of Engineering Systems II* (3)

Spring—evening.

Continuation of Engineering Science 211. Mathematical topics include: numerical solutions of differential equations, functions of complex variables, Laplace transforms, matrices.

217 *Analytical Mechanics* (3)

Fall—evening.

Fundamental principles, generalized coordinates, variational principles and Lagrange's equations, nonholonomic systems, Hamilton's equations, theory of small oscillations.

220 *Nonlinear Mechanics* (3)

Spring—evening.

Topological and analytical methods in nonlinear mechanics, nonlinear resonance, relaxation oscillations.

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[*] An undergraduate course which may be taken for graduate credit with the approval of the Committee on Graduate Studies.

221 *Theory of Elasticity* (3)

Spring—evening.

Stress and strain at a point; differential equations of equilibrium, boundary conditions, compatibility equations, and stress functions; two-dimensional problems in rectangular and curvilinear coordinates; strain energy methods; elementary three-dimensional problems; torsion and bending of prismatic bars; thermal stress.

231 *Fluid Dynamics* (3)

Spring—evening.

Theory of compressible and incompressible fluid motion including: potential motion, circulation and vorticity, mathematical treatment of flow at sub-, trans-, and supersonic velocities, normal and oblique shock, and elements of heat transfer.

MECHANICAL ENGINEERING

211 *Thermodynamics* (3)

Fall—as arranged; spring—as arranged.

Reversible and irreversible processes, equilibrium, ideal and van der Waal's gases, dilute solutions, phase equilibria, electric and magnetic effects, radiation. Introduction to kinetic theory and statistical mechanics.

213 *Heat Transfer* (3)

Spring—as arranged.

Physical and mathematical concepts of heat transfer phenomena under steady and unsteady conditions, including: Stefan-Boltzmann and Planck laws for radiation. Fourier heat equation for conduction, dimensional analysis, and boundary layer theory for convection.

215 *Gas Dynamics* (3)

Spring—as arranged.

Theory of gas dynamics including: combustion, shock phenomena, dynamics of flow, and heat transfer for high temperature gases.

233 *Supersonic Flow and Shock Waves* (3)

Spring—as arranged.

Thermodynamics of one-dimensional compressible fluid flow in nozzles and jets, two-dimensional waves and shocks (plane flow and airfoils), three-dimensional flow around slender bodies of revolution and cones, three-dimensional wing theory, blast waves.

REQUIRED AND ELECTIVE COURSES FROM OTHER DEPARTMENTS

On the following pages appears a partial list of courses in other departments of instruction which are closely related to engineering. Some of these courses are prescribed in the several curricula of the School of Engineering; all are recommended as suitable elective subjects for engineering students.

ACCOUNTING

1–2 *Introductory Accounting* (3–3)

Basic principles and procedures underlying accounting records, preparation of work sheets and financial statements, introduction to cost accounting and valuation, and income determination problems. Prerequisite to Accounting 2: Accounting 1.

101 *Cost Accounting* (3)

Theory and purposes of industrial cost accounting; systems of cost control and determination; analysis and interpretation of cost data. Prerequisite: Accounting 1–2.

111 *Financial Statement Analysis* (3)

Methods and techniques of preparing, analyzing, and interpreting financial statements. Determination and interpretation of trends and ratios. Prerequisite: Accounting 1–2 or permission of the instructor.

211–12 *Managerial Accounting* (3–3)

First half: analysis of the accounting system with special reference to the use of financial and operating records and accounting reports as tools of management; a study of valuation and income determination problems including the influence of price level changes on accounting data. Prerequisite: Accounting 1–2, or 3. *Second half:* a survey of internal accounting controls, commercial budgets, and cost accounting systems used by management in directing and controlling a business. Prerequisite to Accounting 212: Accounting 211 or permission of the instructor.

293 *Budget Preparation and Control* (3)

Principles, techniques, and procedures involved in the development, installation, and operation of a system of budgetary control to aid in the management of commercial, industrial, and government organizations. Prerequisite: Accounting 212.

AIR SCIENCE

1–2 *Leadership Laboratory—Freshman Year* (1–1)

11–12 *Leadership Laboratory—Sophomore Year* (1–1)

21–22 *Air Science I—Freshman Year* (2–2)

51–52 *Air Science II—Sophomore Year* (2–2)

101–2 *Air Science III—Junior Year* (3–3)

151–52 *Air Science IV—Senior Year* (3–3)

BUSINESS AND PUBLIC ADMINISTRATION

Business Administration

101 *Business Organization and Combination* (3)

Simple and interrelated forms of business enterprise and their control by government.

105 *Personnel Management in Industry* (3)

Organization and work of the personnel department, human relations in business.

106 *Problems in Personnel Management* (3)

Illustrated by cases drawn from business and industry. Prerequisite: Business Administration 105.

109 *Office Management* (3)

Organization and layout of an office, use of office machines and appliances, planning and execution of work, supervision problems.

121 *General Insurance* (3)

Principles of property, life, marine, and casualty insurance; the function of insurance in the economic life of a business and individual. Prerequisite: Economics 1–2.

131 *Business Finance* (3)

Principles of financing business enterprises. Prerequisite: Accounting 1–2.

141 *Principles of Marketing* (3)

Survey of marketing, stressing consumption, retailing, wholesaling, and sales management; entire marketing structure and its relation to the total economy. Prerequisite: Economics 1–2.

145 *Sales Management* (3)

Organization of sales department, sales planning and forecasting, quotas, territories, performance standards, analysis and control of distribution costs. Prerequisite: Business Administration 141.

150 *Principles of Purchasing* (3)

Organization for purchasing, purchasing policies, market relationships selection of merchandise, purchasing information and records.

161 *Commercial Law: Contracts, Sales, Agency, and Bailments* (3)

250 *Contract Administration* (3)

Primarily for students in the Engineering Administration program. The administration, negotiation, and renegotiation of contracts between the government and industry for engineering, scientific, and other professional services, facilities, and materials. Contract policies; fixed-price and cost-plus-fixed-fee, bidding, etc.

PUBLIC ADMINISTRATION

213 *Administration in Government* (3)

The background of public administration, particularly federal; its organization framework; and the place of the executive and middle management in the administration of public policy. Review and discussion of administrative thought, concepts, principles, and techniques, with practical problems and cases from federal government.

CHEMISTRY

11–12 *General Chemistry* (4–4)

Prerequisite: one year of high school algebra. Laboratory fee, $18 a semester. Lecture, laboratory, and recitation. This is a full-year course. Credit is not given for the first half until the second half is completed.

21 *Qualitative Inorganic Analysis* (4)

Prerequisite: Chemistry 12. Laboratory fee, $18. Lecture and laboratory.

22 *Quantitative Inorganic Analysis I* (4)

Prerequisite: Chemistry 21. Laboratory fee, $18. Lecture and laboratory.

111–12 *Physical Chemistry Lectures* (3–3)

Students registering for Chemistry 111–12 must register concurrently for Chemistry 113–14 unless they already have credit for physical chemistry laboratory. This is a full-year course. Credit is not given for the first half until the second half is completed. Prerequisite: either (1) Chemistry 22 and 152, Mathematics 20, Physics 8; or (2) Chemistry 21, Mathematics 20, Physics 8 and 55.

113–14 *Physical Chemistry Laboratory* (2–2)

Laboratory to accompany Chemistry 111–12. Students registering for Chemistry 113–14 must register concurrently for Chemistry 111–12 unless they already have credit for lectures in physical chemistry. This is a full-year course. Credit is not given for the first half until the second half is completed. Laboratory fee, $18 a semester.

122 *Quantitative Inorganic Analysis II* (4)

A continuation of Chemistry 22. Prerequisite: Chemistry 22. Laboratory fee, $18. Lecture and laboratory.

135 *Inorganic Chemistry: Preparations* (2)

Prerequisite: Chemistry 152. Prerequisite or concurrent registration: Chemistry 122. Laboratory fee, $18.

151–52 *Organic Chemistry* (4–4)

Chemistry of the carbon compounds. Prerequisite[*]: Chemistry 21. This is a full-year course. Credit is not given for the first half until the second half is completed. Chemistry 151 laboratory fee $11; Chemistry 152 laboratory fee, $18. Lecture and laboratory.

155 *Organic Chemistry: Preparations* (2 or 3)

Synthesis of organic compounds and application of the technique of organic chemistry to the preparation of pure compounds, using larger amounts and greater refinements than in Chemistry 151–52. Prerequisite: Chemistry 22 and 152. Laboratory fee, $10.50 a semester hour.

ECONOMICS[†]

1–2 *Principles of Economics* (3–3)

Survey of the major economic principles, institutions, and problems in contemporary life. Economics 1 is prerequisite to Economics 2.

101–2 *Economic Analysis* (3–3)

Analysis of demand, supply, and commodity pricing; theory of national income determination, pricing of productive services; welfare economics. Economics 101 is prerequisite to Economics 102.

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[*] This prerequisite may be waived in the case of the student who has earned a grade of C or better in Chemistry 12 within the past two years.

[†] Economics 1–2 is prerequisite to all other courses in Economics.

105 *Business Cycles* (3)

Analysis of strategic factors in economic instability, survey of recent business cycle theories.

121 *Money and Banking* (3)

Theory of money, credit, and banking; commercial banking and the Federal Reserve System; other financial institutions; international aspects of money; current financial problems.

141 *Industrial Relations* (3)

Development and practice of collective bargaining in American industry. Public control of industrial relations.

142 *Labor Economics* (3)

Wages, hours, and employment; standards of living; public policy.

161–62 *Public Finance and Taxation* (3–3)

General survey of government expenditures; sources and methods of taxation; economic effects of expenditures, taxes, and government debt policies.

ENGLISH

1 *English Composition** (3)

Review of grammar, exercises in composition, readings.

2 *English Composition** (3)

Exercises in composition, readings. The second half of the six-hour English Composition course required of all students.

11 *The Writing of Reports* (3)

Theory and practice in the writing of technical reports. Prerequisite: English 1, 2.

51–52 *Introduction to English Literature* (3–3)

A historical survey. Prerequisite: English 1.

71–72 *Introduction to American Literature* (3–3)

A historical survey. *First half:* from the beginnings to the Civil War. *Second half:* from the Civil War to the present. Prerequisite: English 1.

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* Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both halves of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A. English 1 is prerequisite to all other courses in English.

91–92 *Introduction to European Literature* (3–3)

Consideration of various types. Prerequisite: English 1.

GEOGRAPHY

51 *Introduction to Geography* (3)

A study of place attributes and characteristics; patterns and associations of physical and cultural earth features.

52 *World Regions* (3)

The analysis of world regional divisions, description and interpretation of region complexes, evaluation of regional differences as they affect the distribution and activities of man.

127 *Economic Geography: Manufacture* (3)

Location and distribution of manufactural industries, analysis of the factors determining both, internal structures and external relationships of selected industries.

131 *Conservation of Natural Resources* (3)

Principles and problems of conservation of vital natural resources: soils, water, forests, minerals, fuels, wildlife. Prerequisite: Geography 51 and 52.

271 *Engineering Geography* (3)

Primarily for students in the Master of Engineering Administration program. Selection, synthesis, and application of regional, physical, political, economic, and social characteristics as they relate to the planning, construction, and operation of engineering works in both the United States and foreign countries; illustrated by reference to a limited number of regions and problems through the case study.

GEOLOGY *

1–2 *General Introductory Geology** (3–3)

Survey course covering the principles of physiography, geology, and mineralogy. Laboratory fee, $5 a semester.

51–52 *Paleontology and Stratigraphy* (3–3)

Lectures and laboratory work on classification and structure of fossil invertebrates, vertebrates, and plants, including their use as guide fossils in stratigraphic geology. Laboratory fee, $5 a semester.

111 *Crystallography* (3)

Elements of crystal structure.

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* Geology 1–2 is prerequisite to all other courses in Geology except 51–52.

121–22 *Structural Geology* (3–3)

Interpretation of geological formations on the basis of their structures. Lectures and field work.

131 *Economic Geology* (3)

Economic aspects of geological structures and compositions with particular reference to the raw materials necessary to modern civilization.

162 *Regional Geology* (3)

Lectures and map work on the physiographic regions of the Western Hemisphere.

MATHEMATICS

3 *College Algebra* (3)

Prerequisite: one year each of high school algebra and high school geometry.

6 *Plane Trigonometry* (3)

Prerequisite: two years of high school algebra and one year of high school geometry or Mathematics 3 (or concurrent registration therefor).

12 *Analytic Geometry* (3)

Prerequisite: Mathematics 3 and 6, or two years of high school algebra, one year of high school geometry, and one-half year of high school trigonometry.

19 *Differential Calculus* (3)

Prerequisite: Mathematics 12.

20 *Integral Calculus* (3)

Prerequisite: Mathematics 19.

102 *Fundamental Concepts of Mathematics*[*] (3)

103 *Calculus and Differential Equations*[*] (3)

112 *Mathematics for Engineers and Scientists* (3)

Topics from advanced calculus, partial differential equations, vector analysis, and complex variables. Prerequisite: Mathematics 103 or 132.

123 *Theory of Equations*[*] (3)

125 *Advanced Algebra*[*] (3)

126 *Advanced Analytic Geometry*[*] (3)

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[*] Prerequisite: Mathematics 20.

132 *Differential Equations** (3)

134 *Introduction to Boundary Value Problems* (3)
Prerequisite: Mathematics 103 or 132.

135 *Projective Geometry** (3)

139 *Advanced Calculus** (3)

140 *Introduction to Analysis* (3)
Prerequisite: Mathematics 139.

141 *Introduction to Infinite Series** (3)

167 *Fourier Series and Spherical Harmonics* (3)
Prerequisite: Mathematics 103 or 132.

171 *Vector Analysis* * (3)

243–44 *Numerical Analysis* (3–3)
Prerequisite: Mathematics 103 or 132.

265–66 *Modern Algebra* * (3–3)

PHYSICAL EDUCATION

1–2 *Freshman Physical Education* (1–1)
Locker and towel fee, $4.50 a semester.

11–12 *Sophomore Physical Education* (1–1)
Locker and towel fee, $4.50 a semester.

PHYSICS

5 *General Physics* (3)

Light, heat, force, energy, and the properties of matter. Prerequisite: high school algebra and plane geometry. Material fee, $11. Lecture laboratory, and recitation.

6 *General Physics* (3)

Mechanics, wave-motion, and sound. Prerequisite: Physics 5; hi school algebra and plane geometry. Material fee, $11. Lecture, la oratory, and recitation.

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* Prerequisite: Mathematics 20.

7 *General Physics* (3)

Elementary electricity and magnetism. Prerequisite: Physics 5; high school algebra and plane geometry. Material fee, $11. Lecture, laboratory, and recitation.

8 *General Physics* (3)

This course is the fourth in the sequence of courses 5, 6, 7, and 8, and emphasizes the connection between the fundamental principles studied in courses 5, 6, and 7, and the phenomena and theories of modern physics. Topics considered include electromagnetic waves (light, radio, and X-rays); atomic and molecular structure; radioactivity; nuclear physics; the quantum theory of matter and radiation; and the elementary particles such as electrons, protons, neutrons, and mesons. Prerequisite: Physics 6 and 7.

55 *Physical Measurements* (3)

Theory and methods of precise measurement. Prerequisite: Physics 6 and 7; Mathematics 19. Material fee, $11. Lecture and laboratory.

101 *Mechanics* (3)

Statics, elasticity, dynamics of solids and fluids, and gravitation. Prerequisite: Physics 6; Mathematics 20.

102 *Heat and Thermodynamics* (3)

Fundamental concepts, heat transfer, the laws of thermodynamics with applications to physical systems. Prerequisite: Physics 8; Mathematics 20.

105 *Principles of Electricity* (3)

Elementary d-c and a-c circuit theory, electric and magnetic fields, dielectric and magnetic materials, motion of charged particles in electric and magnetic fields. Prerequisite: Physics 8; Mathematics 20.

106 *Optics* (3)

Geometrical optics; elementary theory of wave motions; interference, diffraction, polarization, and dispersion of light; laws of black-body radiation. Prerequisite: Physics 8; Mathematics 20.

113 *Atomic Physics* (3)

Properties of elementary particles, interactions with radiation, atomic structure, optical and X-ray spectra, introduction to wave mechanics. Prerequisite: Physics 8; Mathematics 20.

114 *Statistical Physics* (3)

Classical and quantum statistics with emphasis on Maxwell-Boltzmann statistics; applications to kinetic theory of gases, gaseous diffusion, specific heats of gases and solids. Prerequisite: Physics 8; Mathematics 20; permission of the instructor.

118 *Introduction to Solid State Physics* (3)

Dielectric and magnetic properties of solids, electron theory of metals, semiconductors, dislocations, and plastic flow. Prerequisite: Physics 113; Mathematics 20.

123 *Nuclear Physics* (3)

Structure and stability of atomic nuclei, nuclear transformations and reactions, radiation of nuclei, fission. Prerequisite: Physics 113.

128 *Sound* (3)

Production, propagation, and detection of sound waves; vibrations of sounding bodies; acoustic instruments and acoustic measurements. Prerequisite: Physics 8; Mathematics 20.

132 *Electronics* (3)

The phenomena of electron emission from solids, the physical properties of electron tubes, and the principles underlying their basic applications. Prerequisite: Physics 8 and 55, and a course in d-c and a-c circuits in Physics or Engineering. Material fee, $11.

138 *Transistor Principles and Circuits* (3)

Qualitative description of transistor action, introduction to transistor circuit analysis, low-frequency circuits, power amplifiers, high-frequency equivalent circuits, video and intermediate frequency amplified design, linear and nonlinear oscillators. Prerequisite: Physics 132 or the equivalent.

153 *Laboratory in Atomic Physics* (3)

Prerequisite: Physics 8, 55. Material fee, $11.

155 *Advanced Laboratory in Electricity and Magnetism* (3)

Prerequisite: Physics 55, 105. Material fee, $11.

156 *Advanced Laboratory in Optics* (3)

Prerequisite: Physics 55, 106. Material fee, $11.

191 *Nuclear Reactors* (3)

Neutron physics: sources of neutrons, neutron reactions, slowing down and diffusion; introduction to transport theory; fission process; reactor types; basic theory of homogeneous and heterogeneous reactors, including specific numerical studies from recent publications. Prerequisite: Physics 8; Mathematics 20.

POLITICAL SCIENCE

1 *Introduction to Government* (3)

Basic principles and problems of political life: theories forms, and processes of government in the United States and foreign countries. Attention is also given to international relations.

9-10 *Government of the United States* (3-3)

First half: structure, powers, and operation of the Federal Government: Congress, the President, and the Supreme Court; elections, political parties, and pressure groups. *Second half:* state and local governments; civil rights; major functions of government at federal, state, and local levels.

PSYCHOLOGY

145 *Principles of Human Relations* (3)

Primarily for students in the Engineering Administration program. Survey of the psychological principles involved in dealing with individuals and groups.

146 *Problems in Human Relations* (3)

The application of psychological principles to understanding and improving personal and group relations. Emphasis will be upon case studies and specific problems drawn from life situations, with important attention to supervisory and administrative relationships. Prerequisite: Psychology 1 (or Psychology 145 for students in the Engineering Administration program).

SPEECH

1 *Effective Speaking* (3)

Preparation and delivery of extempore speeches, developing confidence and poise, body and voice control; selecting and organizing material. Recording fee, $4.

2 *Persuasive Speaking* (3)

Continuation of Speech 1, which is prerequisite, with emphasis on speech composition and elementary principles of persuasion.

STATISTICS

51 *Introduction to Business and Economic Statistics* (3)

Survey of elementary principles and procedures for presenting, analyzing, and interpreting statistical data; consideration of characteristic values; measures of variability, sampling processes, index numbers, time series analysis, and sampling correlation. Prerequisite: one entrance unit in algebra. Laboratory fee, $9.

91 *Principles of Statistical Methods I* * (3)

The meaning, uses, and applications of: variates and attributes; measurement and enumeration; averages and dispersion; frequency distributions and their characteristics; errors of measurement and their control; purposive and random sampling in theory and practice and their errors and estimates. Prerequisites: one entrance unit in algebra. Laboratory fee, $9.

92 *Principles of Statistical Methods II* * (3)

Correlation theory and applications, power functions; Type I and II errors; introduction to analysis of variance; and the making of statistical decisions. Prerequisite: Statistics 91 or the equivalent. Laboratory fee, $9.

111 *Business and Economic Statistics I* (3)

Admission by permission of the instructor.

112 *Business and Economic Statistics II* (3)

Prerequisite: Statistics 111 or the equivalent.

117 *Analysis of Variance I* (3)

A method to estimate experimental error, multiple and specific type classifications; an introduction to model theory. Applications are stressed. Prerequisite: Statistics 91 and 92.

118 *Correlation and the Chi-square Test I* (3)

A study of simple, partial, and multiple correlation. Rank correlation, the method of contingency, and analysis of covariance. Tests of independence, likeness, and goodness of fit. Applications are stressed. Prerequisite: Statistics 91 and 92.

155–56 *Mathematical Probability* (3–3)

A year course: credit is not given for the first half until the second half is completed. Prerequisite: Mathematics 20 and Statistics 91 and 92.

157–58 *Mathematical Statistics* (3–3)

A year course: credit is not given for the first half until the second half is completed. A study of distribution theories. Prerequisite or concurrent registration: Statistics 155–56.

262 *Managerial Statistics and Quality Control* (3)

Primarily for students in the Engineering Administration program. The application of statistical principles and practices to management and quality control. Emphasis is placed on the use of statistical techniques in making management decisions, controlling quality, and standardization.

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* Statistics 91 and 92 are for Statistics majors, for students in engineering and in the biological and physical sciences.

71–72 *Statistical Information Theory* (3–3)

A year course: credit is not given for the first half until the second half is completed. Basic concepts, definitions, and formulas of information theory; their significance and general properties. Shannon's coding theorem, channel capacity, and transmission of information; inequalities of information theory and sufficiency; applications to statistical problems of discrimination and hypothesis testing; asymptotic distribution theory of information; analysis of contingency tables; loss of information due to grouping and sequential analysis; comparison of experiments.

ALUMNI AND ALLIED ASSOCIATIONS

THE GENERAL ALUMNI ASSOCIATION

The objects of this Association are to unite the graduates in closer sympathy and to promote the general welfare of the University. The following persons are eligible for *active* membership: graduates of any college, school, or division of the University; holders of honorary degrees from the University; and members of the Board of Trustees and of the Faculty of the University. Any person who has matriculated, who has been in regular attendance for one year, and who has left the University in good standing, is eligible for *associate* membership.

The Office of Alumni Relations is in Bacon Hall, 2000 H Street NW., Washington 6, D. C. Alumni are urged to keep the office informed of changes of address or occupation and to supply information with regard to their fellow alumni.

THE ENGINEER ALUMNI ASSOCIATION OF THE GEORGE WASHINGTON UNIVERSITY

The Engineer Alumni Association was organized in 1936 and has been affiliated with the General Alumni Association since that time. Its objects are to unite the graduates and Faculty of the School of Engineering in closer fellowship, to promote the general welfare of the School of Engineering and of the University at large, to foster activities of the engineering organizations recognized by the University, and to advance the profession of engineering in general.

INDEX

A

Absence, regulations concerning
  See Attendance
Academic status of the University, 9
Accounting, courses in, 79
Administration, Officers of, 4–5
Admission, 30–34
Advanced standing, 33, 56–57, 59–60
Advisory Council, 16–17
Advisory system, 43–44
Air Force Reserve Officers Training Corps, 21–22, 36
Air Science, course in, 80
Attendance, 42–43

B

Business and Public Administration, courses in, 80–81

C

Calendar for 1958–59, vi–vii
Changes in program of studies, 46–47
Chapel, 24
Chemistry:
  Bachelor of Science in Engineering option in, 56
  Courses in, 81–82
Civil Engineering:
  Graduate courses in, 72–73
  Undergraduate courses in, 63–66
  Undergraduate curriculum in, 52–54
Colleges, Schools, and Divisions of the University, 8–9
Committees of the Faculty, 17–18
Contents, table of, v
Counseling Center, 24–25
Courses of Instruction, 63–91
Credit:
  Credit hours, explanation of, 63
  Credit hours, maximum allowed full- and part-time students, 43
  For summer school work, 48
  Toward a degree, 47
  Transfer from other institutions, 32

D

Davis-Hodgkins House, 25
Degrees:
  Bachelor of Civil Engineering, 32, 52–54
  Bachelor of Electrical Engineering, 32, 52–53, 54
  Bachelor of Mechanical Engineering, 32, 52–53, 55
  Bachelor of Science in Engineering, 32, 52–53, 55–56
Dishonesty, regulations concerning, 46
Dismissal of students, 51
Dormitories, 23–24
Dropping courses, 36, 46–47

E

Economics, courses in, 82–83
Electrical Engineering:
  Graduate courses in, 73
  Undergraduate courses in, 66–69
  Undergraduate curriculum in, 52–53, 54
Employment, student, 24
Endowment of the University, 7
Engineering Administration:
  Bachelor of Science in Engineering option in, 56
Engineering Science, graduate courses in, 76–78
Engineers' Council, 27
English:
  Courses in, 83–84
  Use of correct, 48
Entrance requirements, 32–33
Examinations:
  College Entrance Board, 31–32
  Comprehensive examination, for Master's degrees, 57, 59
  For admission, 31–32
  For qualifying for advanced standing or waiving curriculum requirements, 35
    See also in Calendar
  Graduate Record, 31, 49
  Physical, 22–23, 48
  Scholastic Aptitude tests, 31–32

F

Faculty:
  Alphabetical list, 13–16
  Standing committees, 17–18

Fees, 34–36
Financial aid, 42
Financial regulations, 34–36
Foreign students, 25
Fraternities, social, 29

G

Geography, courses in, 84
Geology, courses in, 84–85
Government of the University, 9
Grades, 44
Grading system, 44–45
Graduate study, 55–60
  Admission to, 35
Graduation:
  Application for, 48
  Dates
    SEE Calendar
  Requirements, 48–51

H

Health Administration, 22–23
History of the University, 6–7
Honor Societies, 29
Honors List, 47
Hours of Instruction, 19

I

International House, 25

L

Laboratory fees and deposits, 35
  SEE ALSO Courses of Instruction
Library, 51
Living accommodations, 23–24
Loan funds, 42
Location of the University, 9

M

Machine Computer, Bachelor of Science in Engineering option in, 56
Master's problem, 49, 57, 59
Mathematics:
  Bachelor of Science in Engineering option in, 56
  Courses in, 85–86
Mechanical Engineering:
  Graduate Courses in, 78
  Undergraduate courses in, 69–72
  Undergraduate curriculum in, 52–53, 55
Medical privileges, 22–23
Military awards, 40–42

O

Objective of the School of Engineering, 19

P

Physical Education:
  Courses in, 86
  Requirements, 48
Physics:
  Bachelor of Science in Engineering option in, 56
  Courses in, 86–88
Placement Office, 24
Political Science, courses in, 89
Prizes, 38–42
Probation, 45
Professional organizations, 29
Property, responsibility for, 51
Psychology, courses in, 89
Public Administration, courses in, 81
Publications, student, 30

Q

Quality-point index, 44–45

R

Records, transcripts of, 34, 35
Refunds, 36
Registration, 33–34
Regulations, 42–51
Religious organizations, 30
Residence requirements, 49
ROTC:
  SEE Air Force Reserve Officers Training Corps
Rules of the University, right to change, 51

S

Scholarship requirements, 44–46
Scholarships, 36–38
Sororities, 29
Speech, courses in, 89
Staff of Instruction, alphabetical list, 13–16
Statistics, courses in, 89–91
Student:
  Activities, 26–28
  Organizations, 29–30
  Placement Office, 24

Publications, 30
Union, 25
spension, 45

T

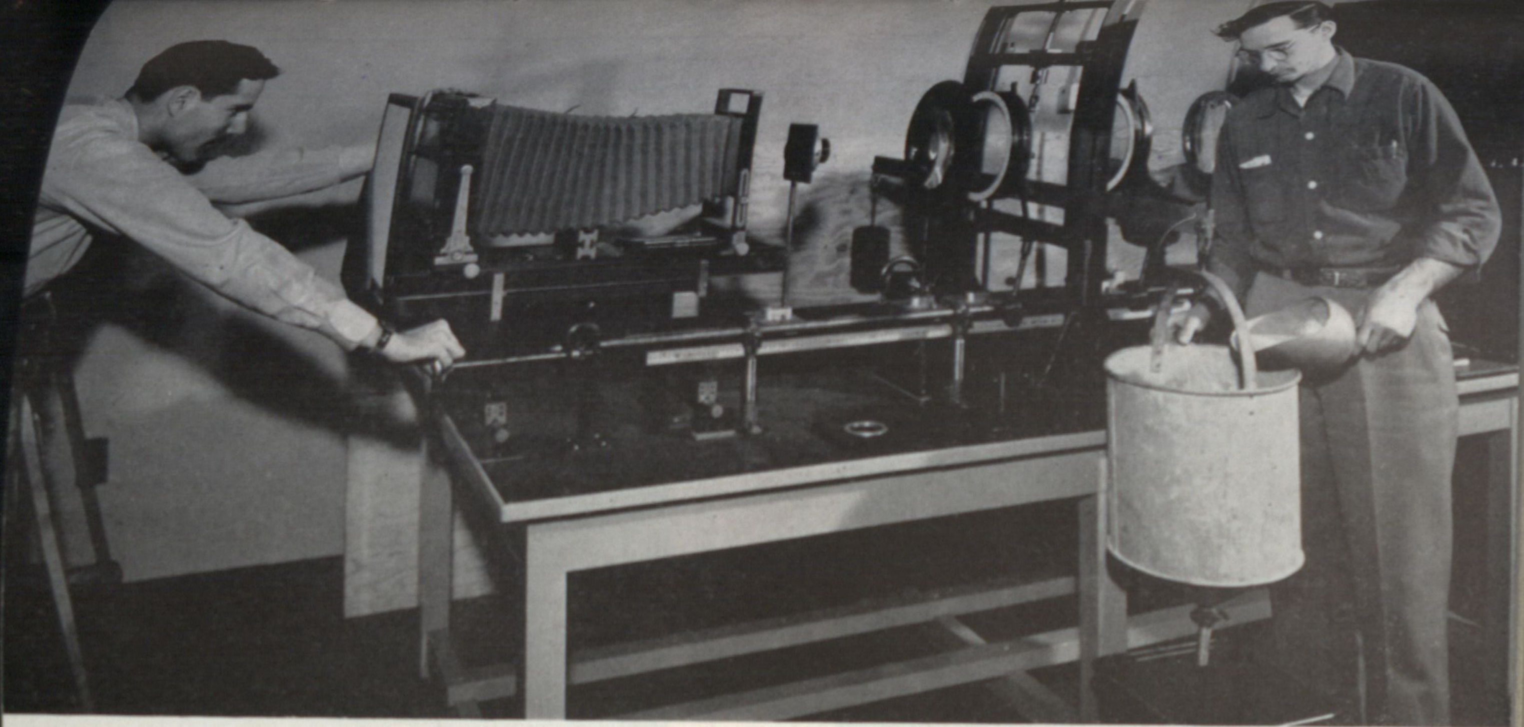
sting and Counseling Center, 24–25
anscripts of records, 34, 35
ustees, Board of, 3
ition, 34

V

Veterans Education, 19–21
Vocational counseling, 24–25

W

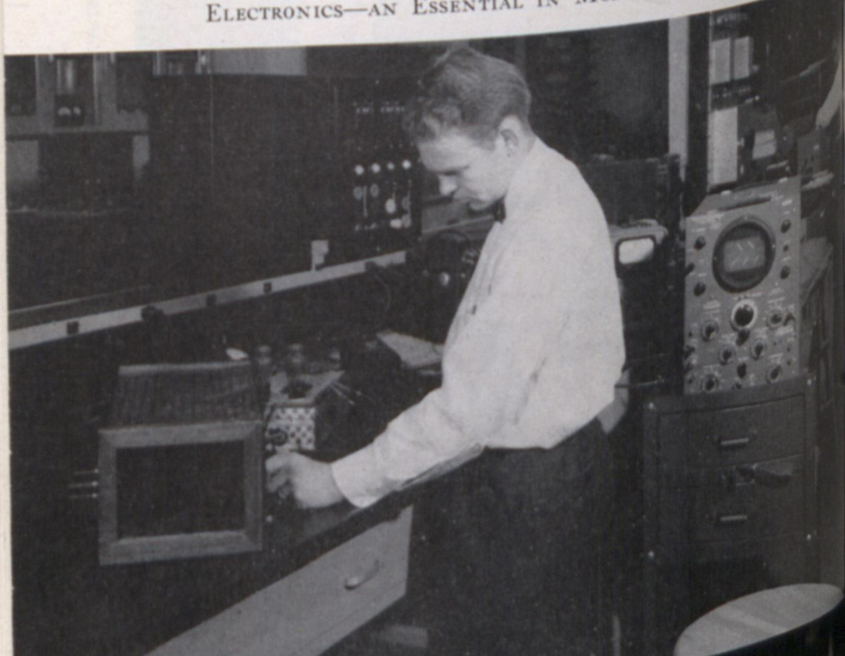
Warning, mid-semester, 45
Withdrawal, 36, 46–47



The Photoelastic Polariscope—for Engineering Research

Class Break, Tompkins Hall of Engineering

Electronics—an Essential in Modern Engineering



THE SCHOOL OF EDUCATION

1958-59

THE GEORGE WASHINGTON UNIVERSITY

BULLETIN

VOL. LVII

No. 7

THE SCHOOL OF EDUCATION

WASHINGTON 6, D. C.

PUBLISHED IN JUNE
MCMLVIII
BY THE UNIVERSITY

CONTENTS

CALENDAR OF THE SCHOOL OF EDUCATION vii
THE BOARD OF TRUSTEES OF THE UNIVERSITY 1
OFFICERS OF ADMINISTRATION OF THE UNIVERSITY 2
THE SCHOOL OF EDUCATION 3
  Faculty and Staff of Instruction 3
  General Information 6
  The Education of Teachers 8
    The Bachelor's Degrees 9
    Bachelor of Science in Physical Education 9
    Bachelor of Arts in Education 13
    Five-year Programs Leading to the Degrees of Bachelor of Arts and Master of Arts in Education 27
    The Degree of Master of Arts in Education 28
    Advanced Professional Certificate 32
    The Degree of Doctor of Education 33
  Reading Clinic 34
  Special Curricula 35
  Regulations 36
    Admission 36
    Registration 38
    Fees and Financial Regulations 38
    Amount of Work 41
    Attendance 42
    Probation 42
    Suspension 42
    Withdrawal 42
    Changes in Program of Studies 43
    Summer School Credit 43
    Graduation Requirements 44
    The Library 44
  Courses of Instruction 46
    Department of Education 46
    Departments of Physical Education 60

CALENDAR
1958–59

1958

July

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September

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December

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February

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March

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July

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August

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September

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October

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November

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December

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CALENDAR OF THE SCHOOL OF EDUCATION
1958–59

Date	Day	Occasion
1958 FALL SEMESTER:		
Sept. 2–12	Thursday through Friday	Preadvising for all entering students
Sept. 11	Thursday	Orientation assembly for all new students
Sept. 12 and 15	Friday and Monday	Curriculum assemblies*
Sept. 18–20	Thursday through Saturday morning	Registration
Sept. 22	Monday	Classes begin
Oct. 3	Friday	Thesis subjects of February Master's candidates due
Oct. 10	Friday	Dissertation subjects of June Doctoral candidates due
Oct. 18	Saturday	Fall Convocation
Oct. 24	Friday	Bachelor of Arts activities plans due
Oct. 31	Friday	Meeting of Committee on Graduate Studies
Nov. 1	Saturday	Applications for Doctoral November comprehensive examinations due
Nov. 11	Tuesday	Veterans Day. Holiday
Nov. 15	Saturday	Comprehensive examinations for Doctoral candidates
Nov. 27–29	Thursday through Saturday	Thanksgiving recess
Nov. 30	Saturday	Applications for Doctoral and Master's January comprehensive examinations due
Dec. 22–Jan. 3	Monday through Saturday	Christmas recess
1959		
Jan. 5	Monday	Classes resume
Jan. 10	Saturday	Theses of Master's candidates due Dissertations of February Doctoral candidates due Comprehensive examinations for Doctoral and Master's candidates

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* All new students are expected to attend one Curriculum Assembly.

CALENDAR OF THE SCHOOL OF EDUCATION—*Continued*

Date	Day	Occasion
Jan. 14	Wednesday	Last day of classes for the fall semester
Jan. 16	Friday	Meeting of Committee on Graduate Studies
Jan. 19–27	Monday through Tuesday	Examination period
Spring Semester:		
Jan. 29–31	Thursday through Saturday morning	Registration
Feb. 2	Monday	Classes resume for the spring semester
Feb. 13	Friday	Thesis subjects for June Master's candidates due
Feb. 23	Monday	Winter Convocation. Holiday
March 2	Monday	Activities plans due from Bachelor of Arts candidates entering the School of Education in February
March 7	Saturday	Dissertation subjects of October Doctoral candidates due
March 27–April 1	Friday through Wednesday	Easter recess
April 1	Wednesday	Applications for scholarships for 1959–60 should be filed
April 9	Thursday	Applications for Doctoral and Master's April comprehensive examinations due
April 10	Friday	Dissertation subjects for February 1960 Doctoral candidates due
April 25	Saturday	Comprehensive examinations for Doctoral and Master's candidates
May 1	Friday	Meeting of Committee on Graduate Studies
May 13	Wednesday	Last day of classes for the spring semester
May 18–26	Monday through Tuesday	Examination period
May 31	Sunday	Baccalaureate
June 3	Wednesday	Commencement
Summer Sessions:		
June 8	Monday	Registration and first day of classes of the presession and twelve-week session
June 15	Monday	Registration for the eight-week term

CALENDAR OF THE SCHOOL OF EDUCATION—Continued

Date	Day	Occasion
June 16	Tuesday	Classes begin for the eight-week term
June 26	Friday	Presession ends
June 29	Monday	Registration and the first day of classes of the six-week session
July 10	Friday	Applications for Doctoral and Master's July comprehensive examinations due
July 15	Wednesday	Meeting of Committee on Graduate Studies
July 20	Monday	Registration and first day of classes of second half of six-week and twelve-week sessions
July 22	Wednesday	Comprehensive examinations for Doctoral and Master's candidates
Aug. 7	Friday	Eight-week term and six-week session end Theses of October Master's candidates due
Aug. 10	Monday	Registration and first day of classes of the postsession
Aug. 14	Friday	Dissertations of October Doctoral candidates due
Aug. 28	Friday	Postsession ends
Sept. 17 and 18.	Thursday and Friday..	Registration for the fall semester of the academic year 1959-60

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* The Dean and Assistant Dean of the School of Education are members ex officio of all committees.

† Elected by the Faculty.

GENERAL INFORMATION

INTRODUCTORY

It is the purpose of the School of Education to prepare teachers, counselors, and administrators for the higher ranges of educational service and to offer opportunities to teachers of experience to extend their education. The School includes the departments of Education, Physical Education, and Home Economics.* It offers both graduate and undergraduate work. Other departments of the University provide general education and subject-matter courses needed for a well-balanced program of teacher education.

Special curricula are provided for liberal arts graduates, housewives, and retired military personnel who wish to prepare for teaching. The School also provides a wide range of courses of interest to emergency teachers who wish to qualify for teaching certificates and teachers who wish to renew licenses.

Laboratory and clinical facilities are provided by the University Reading and Speech clinics. In cooperation with public and private schools and a wide variety of social agencies, ample opportunity for field experience is provided.

The schedule of courses is arranged to meet the convenience of both full-time and part-time students. By attending evening, Saturday, and summer classes, teachers in the schools of the metropolitan Washington area and others within commuting range may complete all the requirements for a degree without giving up their positions.

HISTORICAL DEVELOPMENT

The University began offering professional courses for teachers in 1904–5 and in 1907 it established a Division of Education. In 1909, the Division of Education became the Teachers College which, in its early years, was concerned largely with teacher preparation on the undergraduate level.

In 1928, the Teachers College became the School of Education and greater provision was made for advanced study. Since that time the graduate enrollment has steadily increased with the result that today the School has a considerably larger number of graduate than undergraduate students.

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* The Department of Home Economics offers a curriculum in home-making. Its program i described in a special announcement.

ADVANTAGES OF STUDY IN THE NATION'S CAPITAL

Washington is rich in the resources needed by teachers, counselors, and administrators to supplement classroom instruction. In addition to the library facilities of the University, the Library of Congress, the Library of the Department of Health, Education, and Welfare, and many special collections provide unexcelled opportunities for reading and research. The operation of all branches of the National Government may be observed. Among the art galleries are the National Gallery of Art, the Corcoran Gallery of Art, the Freer Art Gallery, Phillips Memorial Gallery, and the National Museum. The music calendar of Washington is a full one, and includes concerts by the National Symphony Orchestra, Philadelphia Orchestra, and the Boston Symphony Orchestra. Those interested in science find many resources for study at the National Museum, the National Zoological Park, the United States Botanic Garden, and the Aquarium of the Fish and Wildlife Service, Department of the Interior. Students have unique opportunities to become acquainted with the work of the Office of Education, the National Education Association, the American Council on Education, and many other national organizations with headquarters in Washington.

ACADEMIC STATUS

The George Washington University is accredited by the regional accrediting agency, the Middle States Association of Colleges and Secondary Schools. This is important to students who wish to transfer credits from one institution to another.

The University is on the approved list of the American Association of University Women and is a member of the College Entrance Examination Board.

The School of Education is accredited by the National Council for Accreditation of Teacher Education, is a member of the American Association of Colleges for Teacher Education, and was a charter member of the National Association of Colleges and Departments of Education prior to the merger of that association with others to form the American Association of Colleges for Teacher Education.

THE EDUCATION OF TEACHERS

Programs of study for the education of teachers are based upon the assumption that every teacher should have a broad general education, adequate mastery of the content of instruction, and professional competence.

The relative emphases placed upon each of these aspects of the total education of teachers varies in accordance with the purposes of each program. For instance, elementary school teachers, since they teach all subjects, require content preparation of greater breadth and less specialization than secondary school teachers.

It is the view of the School of Education that an acceptable minimum education for teaching requires not less than four years of full-time study or the equivalent part-time study. For superior preparation teachers are urged to plan for five years of full-time study or the equivalent part-time study.

The student may choose any one of the following three plans to achieve superior educational preparation for teaching:

1. Upon receiving the Bachelor's degree, he may take a teaching position and, after acquiring some professional experience, return to the School for graduate study leading to the Master's degree. This plan enables students with Bachelor's degrees to start earning immediately and, by teaching experience, to illuminate graduate study which will follow. However, by delaying acquisition of the Master's degree the student cannot command the higher salary usually associated with this degree and may prejudice his opportunity for promotion.

2. The student may choose to pursue full-time graduate study leading to the Master's degree immediately after receiving the Bachelor's degree. This plan is of advantage to students who wish to defer the decision to seek a Master's degree until completion of the undergraduate program and to students transferring from other institutions, whose transferred credits fit more readily into this plan than into the five-year plan discussed below. Both this program and the five-year program enable the student to command a higher beginning salary and be considered for early promotion.

3. For those whose professional aims are established at the beginning of the junior year, the School offers a five-year integrated program of study leading to the Bachelor's and Master's degrees conferred simultaneously. This program permits careful planning from the outset to meet the demands of the teaching position for which the student is preparing; it permits adequate mastery of the content of instruction in two teaching fields; and advances the professional sequence of courses to the

fourth and fifth years, thus providing a more adequate academic preparation. Students are advised to choose the five-year program if possible.

The first two years of all programs of study are administered by the Junior College of the University. During these two college years the student is encouraged to follow the curriculum designed to prepare him for the program of studies he wishes to pursue later in the School of Education. Students who have followed other Junior College curricula may be admitted to the School of Education with deficiencies which they must make up before graduation. A member of the Faculty of the School of Education serves as adviser to students enrolled in each Junior College pre-Education curriculum. At each registration students must have their programs approved by their advisers. They are also urged to seek counsel in the budgeting of time for the inclusion of nonacademic student activities and off-campus cultural opportunities for the development of a well-rounded personality.

THE BACHELOR'S DEGREES

BACHELOR OF SCIENCE IN PHYSICAL EDUCATION

Bachelor of Science in Physical Education for Men

There are three curricula leading to this degree. The Single-Major and Subject-Certification Teacher's Curriculum is designed to prepare students for teaching positions in smaller schools where it is necessary to teach an academic subject in addition to physical education. The Single-Major Teacher's Curriculum prepares for the teaching of physical education in the larger schools. The Physical Education and Recreation Curriculum has been planned for those who wish to be prepared to direct programs of recreation in addition to the teaching of physical education.

Prerequisite

The following two-year curriculum offered in the Junior College, is required for admission to the School of Education as a candidate for the degree of Bachelor of Science in Physical Education for Men.

		Semester Hours
English	English 1, 2	6
Physical Education	1–2, 11–12	4
Science	Biology 1–2 or Zoology 1–2 (Freshman year)	6 or 8
Social Studies	History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9 and 10; or Sociology 1–2 (Freshman year)	6
	Economics, History, or Political Science (Sophomore year)	6

Major Prerequisites. .	Physical Education 43–44, 47; Speech 1 or 11 (Freshman year)	9
	Physical Education 45–46, 49, 50, 58; Psychology 1, 22 (Sophomore year)	18
Elective		7–9
	Total	64

The minimum requirements for this degree are 66 semester hours, distributed as follows:

Single-Major and Subject-Certification Teacher's Curriculum

The minimum requirements for this degree are 21 semester hours in education, 24 hours in physical education, 18 hours in an academic teaching field, and 3 hours in physiology, distributed as follows:

JUNIOR YEAR	Semester Hours
Learning and Teaching	6
Society and the School	6
History and Principles of Physical Education	3
Adapted Physical Education and Physical Examinations	3
Techniques for Teaching Recreational Dance	1
Methods and Practice in Teaching Physical Education Activities	4
Physiology	3
Academic teaching field	7
Total	33

SENIOR YEAR	Semester Hours
Common Teaching Skills	3
Observation and Student Teaching	6–9
Methods and Materials for Teaching Team Sports in Secondary Schools	4
Methods and Materials for Health Education	3
Tests and Measurements in Physical Education	3
Organization and Administration of Physical Education	3
Academic teaching field	11
Total	33

Single-Major Teacher's Curriculum

The minimum requirements for this degree are 21 semester hours in education, 28 hours in physical education, 3 hours in psysiology, and 14 hours of electives:

JUNIOR YEAR	Semester Hours
Learning and Teaching	6
Society and the School	6
History and Principles of Physical Education	3
Techniques for Teaching Recreational Dance	1
Leadership Organization in the Intramural Program	4
Methods and Practice in Teaching Physical Education Activities	4

SENIOR YEAR	Semester Hours
Common Teaching Skills	3
Observation and Student Teaching	6
Adapted Physical Education and Physical Examinations	3
Methods and Materials for Health Education	3
Tests and Measurements in Physical Education	3

Methods and Materials for Teaching Team Sports in Secondary Schools	4
Physiology	3
Electives	2
Total	33

Organization and Administration of Physical Education	3
Electives	12
Total	33

Physical Education and Recreation Curriculum

The minimum requirements for this curriculum are 66 semester hours, distributed as follows:

JUNIOR YEAR	Semester Hours
Learning and Teaching	3
Society and the School	6
Introduction to Recreation	2
Techniques for Teaching Recreational Dance	1
Leadership Organization in the Intramural Program	4
Methods and Practice in Teaching Physical Education Activities	4
Camp Leadership	1
Recreational Leadership Activities	6
Electives	6
Total	33

SENIOR YEAR	Semester Hours
Common Teaching Skills	3
Observation and Student Teaching	6–9
History and Principles of Physical Education	3
Methods and Materials for Health Education	3
Tests and Measurements in Physical Education	3
Organization and Administration of Physical Education	3
Community Organization for Recreation	3
Administration of Community Recreation Programs	3
Electives	6
Total	33

BACHELOR OF SCIENCE IN PHYSICAL EDUCATION FOR WOMEN

There are three curricula leading to the degree. The Dual-Major Teacher's Curriculum is designed to prepare students for teaching positions in smaller schools where it is necessary to teach an academic subject in addition to Physical Education.

The Single-Major Teacher's Curriculum prepares for the teaching of Physical Education in the larger schools. Within this curriculum there is opportunity for specialization in dance, sports, or correctives.

The Physical Education and Recreation Curriculum has been planned for those who wish to be prepared to direct programs of recreation in addition to teaching Physical Education.

PREREQUISITE

The following two-year curriculum offered in the Junior College, is required for admission to the School of Education as a candidate for the degree of Bachelor of Science in Physical Education for Women.

		Semester Hours
English	English 1, 2	6
	English 51–52, 71–72, or 91–92	6
Physical Education	1–2, 11–12	4
Science	Biology 1–2 or Zoology 1–2	6 or 8
Social Studies	History 39–40, 71–72; Political Science 1 and 9, 1 and 10, or 9 and 10; or Sociology 1–2	6
Major Prerequisites	Physical Education 43–44 (Freshman year)	4
	Physical Education 49, 50, 51–52; Psychology 1, 22 (Sophomore year)	16
Academic Electives	(Each year)	6 or 8
	Total	64

Dual- or Single-Major Teacher's Curriculum

The student desiring to prepare herself to teach another subject in addition to Physical Education for Women may do so by choosing her elective hours from one subject-matter field with the advice of the Dean of the School of Education. Relevant work completed in the Junior College may be counted in this subject-matter field.

JUNIOR YEAR	Semester Hours
Learning and Teaching	6
First Aid and Care of Athletic Injuries	2
Physical Education in the Elementary School	3
History and Principles of Physical Education	3
Adapted Physical Education and Physical Examinations	6
Techniques for Teaching Recreational Dance	1
Methods and Materials for Teaching Physical Education Activities in Secondary Schools and Colleges	2
Methods of Teaching Modern Dance	1
Dance Production	1
Camp Leadership	1
Physiology	3
Electives	3
Total	32

SENIOR YEAR	Semester Hours
Society and the School	6
Observation and Student Teaching	6–9
Methods and Practice in Teaching Physical Education Activities	4
School and Community Health Programs	3
Methods and Materials for Health Education	3
Tests and Measurements in Physical Education	3
Organization and Administration of Physical Education	3
Electives	6
Total	34

Physical Education and Recreation Curriculum

JUNIOR YEAR	Semester Hours
Introduction to Recreation	2
First Aid and Care of Athletic Injuries	2

SENIOR YEAR	Semester Hours
Society and the School	6
Observation and Student Teaching	6

Physical Education in the Elementary School	3
Adapted Physical Education and Physical Examinations	6
Techniques for Teaching Recreational Dance	1
Leadership Organization in the Intramural Program	4
Methods and Materials for Teaching Physical Education Activities in Secondary Schools and Colleges	2
Methods of Teaching Modern Dance	1
Dance Production	1
Recreational Leadership Activities	6
Physiology	3
Elective	3
Total	34

History and Principles of Physical Education	3
Methods and Practice in Teaching Physical Education Activities	4
Methods and Materials for Health Education	3
Camp Leadership	1
Organization and Administration of Physical Education	3
Community Organization for Recreation	3
Administration of Community Recreation Programs	3
Total	32

BACHELOR OF ARTS IN EDUCATION

Programs leading to the degree of Bachelor of Arts in Education have four main objectives: (1) provision of general educational backgrounds, (2) a functional command of ideas, concepts, knowledges, and skills in one or more teaching fields, (3) a mastery of basic professional information and skills adequate for a beginning teacher, and (4) development of attitudes needed for success in teaching. Since the contents of teaching fields differ in scope and complexity, some programs are longer than others in terms of semester hours. None require less than 126 semester hours of satisfactory work, exclusive of required Physical Education.

Normally, from 60 to 64 semester hours of the total requirement are completed in the Junior College of the University or in an equivalent institution elsewhere.

General Education

The general educational backgrounds needed by prospective teachers are obtained through: (1) precollege education, (2) college courses, (3) work experience, (4) leadership activities, (5) participation in student campus activities, and (6) utilization of off-campus cultural opportunities.

College course requirements of the pre-Education curriculum.—Course requirements depend in part upon the senior high school credits presented for college admission. They are as follows:

Semester Hours

English

English 1, 2: English Composition 6

Before students are registered in English 1, they are tested in the minimum essentials of vocabulary, spelling, grammar, standard usage, and writing skill. Those students who show marked superiority may, upon passing further tests, be exempted from one or both semesters of the English Composition course; those who are inadequately prepared for English 1 will be assigned to English A. English 1 is a prerequisite to all other courses in English.

One of the following survey courses in literature 6

English 51–52: Introduction to English Literature
English 71–72: Introduction to American Literature
English 91–92: Introduction to European Literature

Foreign Languages

French, German, Latin, Russian, or Spanish 12

A student offering for admission four acceptable high school units of a single foreign language, or the equivalent, is not required to take any foreign language. If he offers three units, he must complete the second semester of the second-year college course in the same language. If he offers two units, he must complete the entire second-year college course in the same language. If he offers one unit, he must complete the second semester of the first-year college course and the second-year course in the same language.

Physical Education

Physical Education 1–2 and 11–12

A student may be exempted from this requirement if registered for less than three courses or regularly employed during the day.

Science and Mathematics

Two semesters of science or mathematics to supplement senior high school courses in these fields and chosen from the following...... 6–8

Biology 1–2: Survey in Biology
Botany 1, 2: Structure and Functions of the Flowering Plant;
 Survey of the Plant Kingdom
Chemistry 3–4: Survey of Physical Sciences
Chemistry 11–12: General Chemistry
Mathematics 3 and 6: College Algebra; Plane Trigonometry
Mathematics 6 and 12: Plane Trigonometry; Analytic Geometry
Physics 5 and 6 or 7: General Physics
Zoology 1–2: Introduction to Zoology

Social Studies

History 71–72: The Development of the Civilization of the United States 6

Another Social Science chosen from the following courses.......... 6

Economics 1–2: Principles of Economics
Geography 51, 52: Introduction to Geography; World Regions
History 39–40: The Development of European Civilization
Political Science 1 and 9, 1 and 10, or 9 and 10: Introduction to
 Government; Government of the United States

Religion 59–60: History of Religions
Sociology 1–2: Introductory Sociology
A student offering for admission two or more acceptable senior high school units in the Social Studies may be exempted from the second part of this requirement.

Other Courses

Psychology 1: General Psychology 3
Psychology 22: Educational Psychology or
*Psychology 29: Child Psychology 3
Speech 1: Effective Speaking or
Speech 11: Voice and Diction 3
Students who demonstrate marked superiority in Speech may be exempted from this requirement. Such exemption is granted only on the recommendation of the Department of Speech.
Statistics 53: Introduction to Statistics in Psychology and Education 3

Academic Electives

Electives may be increased through the various exemptions

Minimum required credits 60

Work experience, leadership activities, participation in student campus activities, and ***the utilization of off-campus cultural opportunities.***—Obviously, these cannot be prescribed. Nevertheless, they constitute an important part of the general educational background of prospective teachers. In conference with a staff member of the Department of Education assigned as his general adviser, the student is expected to plan adequate experiences in these areas. Not later than one month after matriculation in the School of Education the student must file in the Office of the Dean a statement of such plans approved by his adviser. He must also keep his adviser informed concerning the fulfillment of his plans and to this end include in plans filed, scheduled conferences with his adviser.

Success of the student in enriching his general educational background by these means will be taken into consideration at the end of the first semester of the junior year when the faculty will review the qualifications of candidates to determine any who are not of sufficient promise as prospective teachers to warrant continuation of their candidacies. Success in these activities will also be considered when the list of candidates is again reviewed early in the last semester of the senior year immediately after the results of the National Teacher Examinations are available. In estimating the success of the student in this connection, more weight will be given to evidence of initiative, eagerness to make the most of each experience, balance, and quality of experience than to the number of different experiences.

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* Required for those preparing for elementary school teaching.

Although the student is not required to establish a program of nonacademic activities until he becomes a degree candidate in the School of Education, he is advised to do so as soon as he enters the Junior College. To this end, he should consult with the Junior College adviser of students in the pre-Education curriculum soon after entering the Junior College. Whatever is accomplished in this connection while in the Junior College will reduce the obligations of the student after admission to the School of Education.

TEACHING-FIELD PREPARATION

Teaching-field preparation depends upon the kind of teaching position for which the student is preparing. Those planning to teach in elementary schools need a degree of competency in several fields. Those preparing to teach in junior or senior high schools must demonstrate competency in a major teaching field and a minor teaching field. Ordinarily, students preparing to teach in evening schools for adults are required to prove competency in only one teaching field.

The student should begin teaching-field preparation while in the Junior College and should make provision for it in planning his program of studies.

Teaching-field requirements include satisfactory completion of prescribed academic courses in one or more fields, a satisfactory score on the special field examination of the National Teacher Examinations, and satisfactory completion of the prescribed special methods courses.

Prescribed academic courses vary in number in accordance with the scope and complexity of the teaching field and the license requirements of the various states. Minimum academic course requirements for each major teaching field are listed on succeeding pages. Minor teaching-field requirements are somewhat less than those of a major field. They are determined in conference with an adviser.

The prescribed course in special methods is concerned primarily with methods of initiating, guiding, and evaluating learning experiences dealing with the content of the teaching field. It attempts to bring to the student specific suggestions drawn from the accumulated experience of successful teachers. However, in addition, the course reviews the teaching-field content currently in use in schools and the examination at the end of the course provides the final test of competency in the teaching field.

Prescribed Courses in the Various Teaching Fields

Semester Hours

ART

Six semester hours from the following.............................. 6
Art 1: Art Appreciation
Art 31–32: Survey of Art

Art 71–72: Introduction to the Arts in America
Art 101: Ancient Art
Art 102: Medieval Art
Art 108: Baroque Art in Italy
Art 109: Nineteenth Century Art in Europe
Art 110: Contemporary Art
Six semester hours from the following.............................. 6
  Art 105: Renaissance Art in Italy
  Art 106: Renaissance Art in the North
  Art 143: Primitive Art
  Art 146: Art of the Far East
Twenty-four semester hours from the following.............................. 24
  Art 45–46: Drawing and Painting I—Life and Still Life
  Art 55–56: Drawing and Painting I—Life and Portrait
  Art 65–66: Drawing and Painting I—Life and Portrait
  Art 67–68: Drawing and Painting I—Life, Still Life, and Portrait
  Art 75–76: Drawing and Painting I—Life and Portrait
  Art 81–82: Drawing and Painting I—Life, Still Life, and Portrait
  Art 125–26: Sculpture I
  Art 127–28: Drawing and Painting II—Life, Still Life, and Portrait
  Art 165–66: Drawing and Painting II—Life and Portrait
  Art 179–80: Drawing and Painting II—Life and Portrait
  Art 183–84: Sculpture II
  Commercial Art

Total.............................. 36

BIOLOGY

Biology 1–2: Survey in Biology.............................. 6
Botany 1: Structure and Functions of the Flowering Plant........ 3
Botany 2: Survey of the Plant Kingdom 3
Home Economics 152: Nutrition.............................. 3
Physiology 115: Physiology 3
Zoology 1–2: Introduction to Zoology.............................. 8
*Additional courses, as approved by the adviser.............................. 9

Total.............................. 35

BUSINESS EDUCATION

Accounting 1: Introductory Accounting.............................. 3
Economics 1–2: Principles of Economics.............................. 6
Secretarial Studies 51: Business Correspondence.............................. 3
Additional courses, as prescribed, in *one* of the following groups:
  Group 1—Secretarial Studies†
    Secretarial Studies 2: Intermediate Typewriting 3
    Secretarial Studies 12: Intermediate Shorthand and Transcription 3
    Secretarial Studies 15: Advanced Shorthand, Typewriting, and Transcription 3
    Secretarial Studies 16: Secretarial Shorthand, Typewriting, and Transcription 3

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* Not required for the minor.

† Candidates inadequately prepared for Secretarial Studies 2 or 12 may be required to take Secretarial Studies 1 or 11.

Secretarial Studies 54: Secretarial Practice 3
*Additional courses from the following, as approved by the adviser ... 6
  Accounting 2: Introductory Accounting
  Business Administration 101: Business Organization and Combination
  Business Administration 109: Office Management
  Business Administration 141: Principles of Marketing
  Business Administration 151: Retailing
  Business Administration 161: Commercial Law
  Economics 121: Money and Banking
  Statistics 52: Mathematics of Finance

Total.. 33

Group 2—Bookkeeping, Business Arithmetic, and Business Law
Accounting 2: Introductory Accounting.................. 3
Business Administration 101: Business Organization and Combination 3
Business Administration 102: Business Management.......... 3
Business Administration 161–62: Commercial Law............ 6
Statistics 52: Mathematics of Finance...................... 3
*Six semester hours from the following, as approved by the adviser ... 6
  Accounting 111: Financial Statement Analysis
  Business Administration 121: General Insurance
  Business Administration 131: Business Finance
  Business Administration 138: Investments
  Economics 121: Money and Banking

Total.. 36

Group 3—Distributive Education
Business Administration 141: Principles of Marketing........ 3
Business Administration 142: Marketing Problems 3
Business Administration 145: Sales Management 3
Business Administration 151: Retailing 3
*Twelve semester hours from the following, as approved by the adviser 12
  Business Administration 146: Sales Management Problems
  Business Administration 147: Advertising
  Business Administration 150: Principles of Purchasing
  Business Administration 158: Traffic Management
  Business Administration 175: Introduction to Foreign Trade
  Business Administration 176: Exporting and Importing

Total.. 36

CHEMISTRY

Chemistry 11–12: General Chemistry 8
Chemistry 21: Qualitative Inorganic Analysis.............. 4
Chemistry 22: Quantitative Inorganic Analysis I 4
Chemistry 151–52: Organic Chemistry 8
Chemistry 191: History of Chemistry...................... 2

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* Not required for the minor.

Mathematics 3: College Algebra	3
Mathematics 6: Plane Trigonometry	3
Mathematics 12: Analytic Geometry	3
Physics 5, 6, 7: General Physics	9
Total	44

ELEMENTARY EDUCATION

Education 113: Elementary School Art	3
Education 114: Elementary School Music	3
Education 117: Elementary School Science	3
Education 128: Children's Literature	3
History 71–72: Development of the Civilization of the United States	6
Physical Education 101: Physical Education in the Elementary School	3
Science as approved by the adviser	6–14
Twelve semester hours from the following, as approved by the adviser	12
Economics 1–2: Principles of Economics	
Geography 51, 52: Introduction to Geography; World Regions	
History 39–40: The Development of European Civilization	
Political Science 9–10: Government of the United States	
Religion 59–60: History of Religion	
Sociology 1–2: Introductory Sociology	
Total	39–47

ENGLISH

English 1, 2: English Composition	6
English 52: Introduction to English Literature	3
English 71–72: Introduction to American Literature	6
English 125: The Evolution of Modern Speech	3
English 135–36: Shakespeare	6
Speech 11: Voice and Diction	3
*Nine semester hours from the following, with approval of adviser	9
English 151–52: The Romantic Movement	
English 161–62: Victorian Literature	
English 165–66: The Twentieth Century	
English 171–72: Studies in American Literature	
English 173–74: Major American Poets	
English 176: American Drama	
English 177–78: American Fiction	
English 182: The English Novel	
English 199: Proseminar	
Total	36

FRENCH

French 1–2: First-year French	6
French 3–4: Second-year French	6
French 9–10: French Conversation and Composition	6
French 51–52: Survey of French Literature and Civilization	6
*Additional courses in French, as approved by the adviser	12
Total	36

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* Not required for the minor.

GENERAL SCIENCE†

Chemistry 11–12: General Chemistry	8
Chemistry 21: Qualitative Inorganic Analysis	4
Physics 5, 6, 7, 8: General Physics	12
Nine semester hours from the following	9
Mathematics 3: College Algebra	
Mathematics 6: Plane Trigonometry	
Mathematics 12: Analytic Geometry	
Mathematics 19: Differential Calculus	
Mathematics 20: Integral Calculus	
One of the following	6-8
Biology 1–2: Survey in Biology	
Botany 1, 2: Structure and Functions of the Flowering Plant; Survey of the Plant Kingdom	
Zoology 1–2: Introduction to Zoology	
Total	39-41

GEOGRAPHY

Geography 51: Introduction to Geography	3
Geography 52: World Regions	3
Geography 103–4: Cartography	6
Geography 113: Geomorphology	3
Geography 114: Weather and Climate	3
Geography 131: Conservation of Natural Resources	3
Geography 142: Urban Geography	3
*Six semester hours from the following	6
Geography 183: Western Europe	
Geography 184: The Mediterranean	
Geography 191: Middle America	
Geography 192: South America	
Geography 195: Eastern and Southeastern Asia	
Geography 197: The Pacific	
Geography 198: Australia	
*Six semester hours from the following	6
Geography 125: Economic Geography: Trade and Transportation	
Geography 126: Economic Geography: Raw Materials	
Geography 127: Economic Geography: Manufacture	
Geography 128: Economic Geography: Agriculture	
Geography 132: Land Use	
Geography 141: Geography of Settlement	
Total	36

GERMAN

German 1–2: First-year German	6
German 3–4: Second-year German	6
German 9–10: German Conversation and Composition	6

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* Not required for the minor.

† May not be chosen as a minor field.

German 51–52: Introduction to German Literature.............. 6
*Additional courses in German, as approved by the adviser........... 12

Total.. 36

HISTORY

History 39–40: The Development of European Civilization......... 6
History 71–72: The Development of the Civilization of the United States 6
Six semester hours from each of the following groups, as approved by the adviser 18

Group 1—American History
- History 171–72: Social History of the United States
- History 173: Representative Americans
- History 174: Economic History of the United States
- History 181–82: Diplomatic History of the United States

Group 2—European History
- History 109: Thought and Culture of the Western World I: Ancient Civilization
- History 110: Thought and Culture of the Western World II: The Middle Ages and Renaissance
- History 130: Nationalism
- History 145–46: Russian History
- History 147: Economic History of Europe
- History 149–50: European Diplomatic History
- History 151–52: English History

*Group 3—Latin American History
- History 163: Colonial Latin America
- History 164: South America since Independence
- History 166: Mexico and the Caribbean since Independence
- Political Science 177: Recent Trends in Latin American Politics and Government
- Political Science 178: International Politics in the Western Hemisphere

*Additional semester hours from one of the foregoing groups, as approved by the adviser.................................... 6

Total.. 36

HOME ECONOMICS

Home Economics 1: Food Selection and Preparation............. 3
Home Economics 22: Clothing: Its Selection, Cost, and Care...... 3
Home Economics 51: Family Meals 3
Home Economics 53: Family Health and Household Sanitation.... 3
Home Economics 62: Clothing Construction 3
Home Economics 102: Advanced Food Preparation.............. 3
Home Economics 123: Household Finance and Problems of the Consumer 3
Home Economics 143: Advanced Clothing Construction.......... 3
Home Economics 152: Nutrition 3
Home Economics 171: House Furnishing 3

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* Not required for the minor.

Home Economics 181: The Child in the Home	3
Home Economics 192: The Home, Its Management and Equipment	3
Physiology 115: Physiology	3
Total	39

MATHEMATICS

Mathematics 3: College Algebra	3
Mathematics 6: Plane Trigonometry	3
Mathematics 12: Analytic Geometry	3
Mathematics 19: Differential Calculus	3
Mathematics 20: Integral Calculus	3
*Mathematics 102: Fundamental Concepts of Mathematics (or an alternative approved by the adviser)	3
*Mathematics 123: Theory of Equations, or *Mathematics 125: Advanced Algebra	3
*Mathematics 132: Differential Equations, or *Mathematics 139: Advanced Calculus	3
*Additional course in Mathematics, as approved by the adviser	3
Statistics 52: Mathematics of Finance	3
Total	30

PHYSICS

Physics 5, 6, 7, and 8: General Physics	12
Physics 55: Physical Measurements	3
Physics 101: Mechanics	3
Physics 105: Principles of Electricity	3
Physics 106: Optics	3
*Chemistry Elective—Chemistry 11–12: General Chemistry, or Chemistry 12–21: General Chemistry and Qualitative Inorganic Analysis	
Mathematics 12: Analytic Geometry	
Mathematics 19: Differential Calculus	
Mathematics 20: Integral Calculus	
*Six semester hours to be selected from the following Physics 102: Heat and Thermodynamics Physics 113: Atomic Physics Physics 114: Statistical Physics Physics 128: Sound Physics 132: Electronics Physics 155: Advanced Laboratory in Electricity and Magnetism Physics 156: Advanced Laboratory in Optics	
Total	

SOCIAL STUDIES

History 39–40: The Development of European Civilization	
History 71–72: The Development of the Civilization of the United States	
Political Science 9–10: Government of the United States	

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* Not required for the minor.

Twelve semester hours from the following 12
Economics 1–2: Principles of Economics
Geography 51, 52: Introduction to Geography; World Regions
Religion 59–60: History of Religion
Sociology 1–2: Introductory Sociology
*Additional second-group courses, as approved by the adviser, from one of the following fields: Economics, Geography, History, Political Science, Religion, Sociology 12

Total 42

SPANISH

Spanish 1–2: First-year Spanish 6
Spanish 3–4: Second-year Spanish 6
Spanish 9–10: Spanish Conversation and Composition 6
*Additional courses, as approved by the adviser 18

Total 36

SPEECH

Speech 1: Effective Speaking 3
Speech 2: Persuasive Speaking 3
Speech 11: Voice and Diction 3
Speech 32: Oral Reading 3
Speech 101: Voice and Phonetics 3
Speech 121: Group Discussion and Conference Leadership 3
Speech 153: Acting 3
Speech 175: Speech Correction 3
One of the following areas of specialization, as approved by the adviser:

*Group 1—Speech Arts
  Twelve semester hours from the following 12
    Speech 102: Oral Interpretation of Literature
    Speech 126: Public Discussion and Debate
    Speech 154: Play Production
    Speech 166: History of the Theater
    Speech 169: Creative Dramatics and Children's Theater
*Group 2—Speech Correction
  Twelve semester hours from the following 12
    Speech 176: Speech Correction
    Speech 177–78: Clinical Practice in Speech Therapy
    Speech 182: Hearing Problems and the Testing of Hearing
    Speech 183–84: Clinical Practice in Hearing Therapy
    Speech 191: Proseminar: Speech Correction
    Additional courses in English, Physiology, Psychology, or Speech, as approved by the adviser

Total 36

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* Not required for the minor.

PROFESSIONAL EDUCATION

The basic professional information, skills, and attitudes needed by beginning teachers are provided through a sequence of courses to be taken in the junior and senior years. Lectures and class discussions are closely coordinated with field work. Instruction is differentiated to meet the needs of those preparing to teach on the various levels—elementary school, junior high school, senior high school, and adult.

PROFESSIONAL COURSES—SECONDARY

Education 109–10: Learning and Teaching	6
Education 121–22: Society and the School	6
Education 131: Common Teaching Skills	3
Education 133–34: Observation and Student Teaching	6–9
Three to six semester hours from the following Special Methods Courses Education 136: Teaching English Education 138: Teaching Social Studies Education 140: Teaching Mathematics Education 144: Teaching Science Education 146: Teaching Foreign Languages Education 148: Teaching Home Economics Education 150: Teaching Business Subjects	3–6
Total	24–30

PROFESSIONAL COURSES—ELEMENTARY

Education 109–10: Learning and Teaching	6
Education 111: Methods in Elementary Education	6
Education 121–22: Society and the School	6
Education 133–34: Observation and Student Teaching	6–9
Total	24–27

Learning and Teaching.—Candidates enrolled in four-year programs leading to the degree of Bachelor of Arts take this course in the junior year. Those enrolled in five-year programs take it in the senior year.

The course attempts to promote a functional understanding of the nature of learning and teaching—characteristics of learning and principles of teaching are presented and discussed in the one two-hour class meeting each week. At least an equal amount of time is spent in observation and study of the application of these characteristics and principles to classroom situations. Class discussion normally revolves around these field experiences.

The course is also intended to provide the student with exploratory experiences of assistance to him in deciding whether to choose the profession of teaching. The student's performance in connection with the course is one of the factors considered when the Faculty reviews the list of candidates who have completed the first semester of the junior year (senior year for those enrolled in five-year programs).

Society and the School.—This course is also taken in the junior year by candidates enrolled in four-year programs (senior year by those in five-year programs).

The first half of the course attempts to promote an understanding and appreciation of the role of schools in the sound promotion of the enduring interests of our democratic society. More particularly, it attempts to develop a functional understanding of the contributions of all social agencies in the education of people and of desirable cooperative working relations that help the school to play its part as a member of the institutional "team" of the community.

The second half of the course is concerned with study of the school as a whole—its purposes, program of studies, out-of-class activities, general organization, and major instructional problems. Although schools at all levels are studied, students give particular attention to schools at the level within which they are preparing to teach.

Classes meet for lecture and discussion for one two-hour meeting each week. At least an equal amount of time is spent in field study. During the first half each student studies cooperating social institutions. In the second half extended study of schools at the level of the student's special interest is supplemented by briefer studies of schools at other levels. Class discussion is largely determined by field experiences.

This course is also intended to provide the student with exploratory experiences of guidance value. The performance of the student in the first half of the course is also given careful consideration by the Faculty in its review of the list of candidates at the beginning of the second semester of the junior year (senior year for those enrolled in five-year programs).

Common Teaching Skills.—Those enrolled in four-year programs take this course in the senior year. Those enrolled in five-year programs take it in the fifth year.

The course is concerned with the skills needed by teachers in connection with classroom management, teaching techniques, homeroom procedures, administrative routines, activity sponsorship, group planning, and public relations.

Classes meet for one and one-half hours twice a week for lecture, discussion, and laboratory. The observation of classroom teaching done in connection with the Observation Course (Education 133), for which students are normally enrolled concurrently, provides the field work of the course.

Special Methods Courses.—Associated with each teaching field is a course dealing with its special teaching problems. In addition to the study of practices followed by successful teachers, actual teaching content as found in current texts and courses of study is reviewed. Needed content, not included in academic courses available for teaching-field preparation, is taught in these courses.

Observation and Student Teaching.—This course is taken in the senior year by students enrolled in four-year programs (in the fifth year by those in five-year programs).

It begins with the observation of classroom teaching in selected situations. Assumption of responsibility for teaching functions is gradual, leading eventually to practice in the complete direction of classroom activities. Those preparing to teach in secondary schools have the opportunity of observing and doing practice teaching in both major and minor teaching fields on the senior high school level. The course is directed by full-time members of the faculty of the School of Education. The work of each student is under the direct supervision of a critic teacher, selected because of unusual success in teaching, ability to supervise, and broad understanding of educational problems. Critic teachers are part-time members of the instructional staff of the School. Observation and student teaching are done in the public schools of the metropolitan area of Washington, assuring practice in situations comparable to those the student is likely to face on becoming a teacher.

Special Curricula in Elementary Education

Students preparing for elementary school teaching may also qualify as teachers of French, Spanish, remedial speech, and remedial reading. Programs should be planned in conference with an adviser.

ATTITUDES NEEDED FOR SUCCESS IN TEACHING

The development of attitudes that motivate professional behavior consistent with the nature of the learning-teaching process is basic to success in teaching. Among the most important of these attitudes are: appreciation of the role of learning in human improvement, respect for intellectual proficiency and true scholarship, objective thinking, and a sense of mission as a member of an important profession.

The responsibility for developing and strengthening attitudes favorable to success in teaching is shared by all parts of the program of teacher education. General education provides a foundation of information essential to an understanding of the course of human events, skills that promote effective social intercourse, the bases of perspective, and an appreciation of cultural development. Teaching-field preparation stimulates intellectual curiosity and respect for objective scholarship in contrast to rationalization. Professional education is organized in a sequence of learning activities primarily based upon the results of research concerning the ways in which the learner grows and develops.

To help students understand the role of education in society and human development and, thus, strengthen a sense of mission and pride in becoming members of the teaching profession, professional courses are closely related to field experiences, and students are encouraged to discuss freely varying viewpoints concerning goals and the interpretation of research data.

Since individual needs in the development of attitudes vary widely, students are encouraged to confer frequently with staff members. Conference hours are designated for this purpose.

FIVE-YEAR PROGRAMS LEADING TO THE DEGREES OF BACHELOR OF ARTS AND MASTER OF ARTS IN EDUCATION

Five-year programs are designed: to permit more adequate teaching-field and professional preparation, to prepare for special teaching positions, and to meet teaching-certificate requirements based upon five years of preparation.

Students in these programs usually devote the junior year to additional teaching-field preparation and general education. Ordinarily, teaching-field preparation is continued in the senior year and the first two professional courses (Education 109–10, 121–22) are taken. The work of the fifth year includes the remaining undergraduate professional courses and the balance of graduate courses needed to meet the requirements of the degree of Master of Arts.

Candidates must have a quality-point index of at least 2.50 before beginning the work of the senior year. As much as 18 semester hours of the work of the senior year may be taken for graduate credit. Observation and Student Teaching, taken in the fifth year, may not be taken for graduate credit.

Candidates enrolled in five-year programs are able to prepare more adequately in their major or minor teaching fields, or in both. Additional teaching-field courses must be approved by the adviser in the teaching field concerned.

The five-year plan of study also provides an opportunity for candidates to prepare to teach “common learnings” courses in one or more of the various core curriculum plans now being adopted in many secondary schools. Such programs need to be carefully planned to meet the demands of the situation in which the candidate hopes to teach.

A number of cities and some states require five years of satisfactory preparation before issuing certain teaching certificates. Candidates seeking such certificates should familiarize themselves with the requirements of the community or state concerned and plan their programs accordingly.

Five-year programs must meet all the requirements of the degrees of Bachelor of Arts and Master of Arts in Education, and must be approved by the adviser designated for these programs.

THE DEGREE OF MASTER OF ARTS IN EDUCATION

Programs of study leading to the degree of Master of Arts in Education are designed to enable teachers of experience to increase their knowledge of professional and academic information and skills, prepare for special types of educational service, and provide opportunities for graduates of liberal arts colleges to acquire needed professional education.

Programs are planned in conference with the designated Adviser and take into consideration the interests of the candidate, his previous background, and the certification requirements of the state and locality in which he plans to teach.

Plans of Study

Two general plans of study lead to the degree.

Plan 1.—This plan requires a minimum of 30 hours of graduate credit, including a thesis carrying 6 hours of graduate credit.

Plan 2.—This plan requires a minimum of 33 hours of graduate credit, including a course in *Educational Research Methods and Procedures* carrying 3 hours of graduate credit.

Under Plan 1, a minimum of 12 semester hours, in addition to the thesis, must be from courses planned primarily for graduate students (third-group courses). Under Plan 2, a minimum of 18 semester hours, in addition to the course in *Educational Research Methods and Procedures,* must be from third-group courses. Under either plan a minimum of 12 semester hours, not including the thesis or the research course, must be from courses offered in the Department of Education.

Programs may provide for additional academic preparation in one or more teaching fields. In such cases, however, undergraduate and graduate courses combined must be at least equivalent to the undergraduate requirements for the degree of Bachelor of Arts in Education in the teaching field concerned.

Programs are normally based upon undergraduate preparation equivalent to the requirements for the degree of Bachelor of Arts in Education (see pages 13–15). Candidates with less preparation must make up their deficiencies either prerequisite to or as part of their graduate study.

Each candidate must file in the Office of the Dean not later than one month after admission to the School of Education a program of study approved by his adviser.

THE THESIS

The thesis required under *Plan 1*, must conform to standards prescribed. A statement of these standards may be obtained at the Office of the Dean.

The thesis subject must be approved in writing by the candidate's adviser and recorded in the Office of the Registrar by the date announced in the University calendar. One typewritten original and two legible and complete carbon copies of the thesis in its final form (on official thesis paper) must be presented to the Dean by the candidates not later than the date announced in the University calendar.

Payment of tuition for the thesis will entitle the candidate, during the academic year of registration, to the advice and direction of the member of the Faculty under whom the thesis is to be written. In case a thesis is unfinished, an additional successive academic year may be granted without further tuition payment. The student must, however, be registered in residence during this period. If the preparation of the thesis extends beyond the two-year period it must be registered for again and tuition paid on the same basis for a repeated course.

Accepted comprehensive problems, theses, or dissertations, with accompanying drawings, become the property of the University and are deposited in the University Library, where the duplicate copies are bound and made available for circulation. Permission to publish or adapt material in them must be secured from the appropriate dean.

COMPREHENSIVE EXAMINATION

In addition to the course examinations, the candidate must pass a comprehensive examination in two parts: (1) a general three-hour examination concerned with an integrated understanding of the major areas in professional education, and (2) a special three-hour examination concerned with the candidate's area of specialization.

PROGRAMS OF STUDY

Secondary Education—Senior or Junior High School

Students interested in secondary school teaching whose undergraduate degrees are in professional education are encouraged to strengthen their teaching-field preparation by including in their programs of study content courses.

Programs include, in addition to teaching-field courses 6 semester hours in Secondary Education, and an additional 12 semester hours of work chosen from the following professional courses: Audio-visual Education, Adolescent Growth and Development, Comparative Education, Contemporary Problems in Education, Curriculum, Educational Measurement, Evaluation, Extra-classroom Activities, Group Procedure in Education, Guidance in Secondary Schools, History of Education, Learning and Teaching, Teaching Secondary School English, and Teaching Secondary School Social Studies.

School Administration—Secondary School Principalship or Elementary School Principalship

Programs in administration include The Teacher and School Administration, The Teacher and School Supervision, and either Secondary School Management or Administration of Elementary Education. Additional courses are chosen as needed from Adult Education, Curriculum, Elementary Education, Guidance, Public Relations, School Finance, School Law, Planning the School Plant, and Secondary Education.

Adult Education

Programs in the education of adults may include additional teaching-field preparation. In addition to 6 semester hours in Adult Education, professional courses may be chosen from Audio-visual Education, Contemporary Problems in Education, Curriculum, Educational Measurement, Employee Training, Evaluation, Group Procedures in Education, Guidance, History of Education, Learning and Teaching, Mental Hygiene.

Elementary Education

Programs customarily include Basic Issues in Elementary Education and Instructional Areas in Elementary Education, with additional courses chosen from Audio-visual Education, Child Growth and Development, Children's Literature, Contemporary Problems in Education, Curriculum, Educational Measurement, Education of Exceptional Children, Elementary School Classroom Procedures, Evaluation, Group Procedures in Education, History of Education, Learning and Teaching, Mental Hygiene, Reading Problems, and Speech Correction.

Comparative Education

Programs in comparative Education usually include 12 semester hours in Contemporary Problems in Education and Comparative Education, with additional courses chosen from Adult Education, Basic Issues in

Elementary Education, Curriculum, History of Education, and Secondary Education.

Curriculum

Programs in curriculum development include 9 semester hours in Curriculum, with additional courses chosen from Adolescent Growth and Development, Adult Education, Audio-visual Education, Child Growth and Development, Educational Measurement, Elementary Education, Evaluation, Extra-classroom Activities, Group Procedures in Education, Learning and Teaching, and Secondary Education.

Employee Training

Programs in the training of employees in business, industry, and government normally include 12 semester hours in Employee Training and Adult Education. Additional courses are chosen from Audio-visual Education, Contemporary Problems in Education, Curriculum, Guidance, Mental Hygiene, Personnel Psychology, Public Relations, and Techniques of Counseling.

Guidance

Programs in guidance usually include courses in Educational and Vocational Guidance, Techniques of Counseling, Guidance in Secondary Schools, and Occupational and Educational Information. Additional courses frequently chosen include Adult Education, Contemporary Problems in Education, Curriculum, Employee Training, Evaluation, Group Procedures in Education, Individual Psychological Testing, Personnel Psychology, Psychological Tests, Secondary Education, and Test Construction.

Philosophy and History of Education

Programs in the philosophy and history of education include 12 semester hours in these fields, with additional courses chosen from Adult Education, Basic Issues in Elementary Education, Curriculum, School and Community, and Secondary Education.

Reading

Programs in developmental and remedial reading include courses in Reading Problems and the Clinical Study of Reading Problems. Additional courses are chosen from Child Growth and Development, Contemporary Problems in Education, Curriculum, Education of Exceptional Children, Education of Slow-learning Children, and Education of the Gifted.

Teacher Education

Programs in teacher education include 6 semester hours in this field, with additional courses chosen from Adolescent Growth and Development, Child Growth and Development, Contemporary Education, Contemporary Problems in Education, Curriculum, History of Education, and Secondary Education.

THE ADVANCED PROFESSIONAL CERTIFICATE

Upon the satisfactory completion of the program of advanced graduate studies of the School of Education, the Advanced Professional Certificate is granted. This program is designed to prepare teachers and administrators for more effective service in their chosen fields and to enable them to qualify for a higher step in the local salary scale.

The program of studies leading to the certificate is selected by the candidate and his adviser from the various related departments of the University in accordance with the needs of the candidate. He is encouraged to include in his program study at other accredited higher institutions when such study seems to be in his best interest. In general it includes thirty hours of graduate credit beyond the Master's degree. The candidate wishing to increase his teaching proficiency may include additional study in his teaching field.

Requirements for the Certificate

Plans of Study

In planning his program of studies the candidate should give first consideration to his particular needs. If he is a teacher and his graduate study leading to the Master's degree was largely in professional education, he may find it desirable to emphasize additional mastery of his teaching field. If his Master's preparation was in a content field, he may wish to devote a major part of his program to additional professional study. Those in administration and related services may wish to continue specialization on a more advanced level.

The program of study must include, in addition to any prerequisites, a minimum of thirty hours of graduate credit in third-group courses and not less than twelve semester hours in courses offered by the School of Education.

Residence

Candidates for the Advanced Professional Certificate must complete satisfactorily at this University a minimum of eighteen semester hours in courses offered on the campus. The balance of the program may be in the College of General Studies off-campus courses or in other approved institutions of higher learning. The candidate is not required to pursue his program of study continuously. On request, a leave of absence is granted to the candidate for a period not to exceed three years.

THE DEGREE OF DOCTOR OF EDUCATION

The requirements for the degree of Doctor of Education cannot be stated in semester hours, but they consist in general of at least two full years of work beyond the degree of Master of Arts in Education or the equivalent. The programs of study are designed to prepare students for administrative or supervisory positions, the teaching of education in normal schools or colleges, the teaching of an academic subject in schools or colleges, or for specialized types of educational service. The work is given a practical rather than a theoretical bent, and emphasizes the mastery and application of subject matter, both in the study requirements and in the dissertation. Special emphasis is placed upon the professional success of the candidate.

The candidate's program of study depends for the most part upon his previous educational background and his professional objective. Opportunities are provided for study leading to the following professional objectives:

School Superintendent
Secondary School Principal
Elementary School Principal
Supervisor
Director of Guidance
Director of Curriculum Development
Professor of Education
Specialist in Educational Research

Admission to Candidacy

To be admitted to candidacy for the degree the applicant must be accepted by the Committee on Graduate Studies on the basis of an examination which will usually include the following: (1) a written examination involving problems related to the applicant's background; (2) a scholastic-aptitude test; (3) an oral examination.

Consultative Committee

If the applicant is accepted as a candidate, his consultative committee in cooperation with the candidate, will (1) determine the candidate's fields of study, in each of which the candidate must pass a written examination at least eight months before he presents himself for the degree; (2) formulate a list of courses and readings that will assist him in preparing for these examinations; and (3) designate the tools of investigation that will be needed by the candidate in the prosecution of his study. These tools may include one foreign language or more, statistical methods, historical criticism, or any others considered essential by the committee. An examination in the tools designated must be passed by the candidate before he takes his final comprehensive examination.

THE DISSERTATION

When the candidate has satisfied the requirements of his consultative committee, the committee is dissolved. A member of the Faculty, in whose field the topic of the dissertation falls, is then appointed to serve as the candidate's adviser on his dissertation and in his field of specialization and to recommend him to the Dean for the final oral examination when, in his judgment, the candidate's dissertation is acceptable.

Not later than the date specified in the University calendar the candidate shall submit to the Dean of the School of Education three copies of his dissertation—one typewritten original and two legible and complete carbon copies, on official thesis paper—and also a typewritten summary of the dissertation consisting of not more than 3,500 words. Requirements regarding the form of the dissertation are stated in the general catalogue and additional information will be supplied by the Dean.

The successful candidate is required, before receiving his degree, to pay a fee to cover the expense of printing the summary of his dissertation.

THE FINAL EXAMINATION

At least three weeks before the degree is to be conferred the candidate must pass an oral examination on his dissertation and on his field of specialization before a committee of the Faculty appointed by the Dean, supplemented by two experts from outside the University. This examination is open to the public and all are privileged to question the candidate. The Dean, or a member of the Faculty designated by him will preside at this examination.

READING CLINIC

To help children and adults with reading difficulties the University operates a diagnostic and corrective reading clinic. Children may be referred by principals, teachers, or parents. Adults may apply by telephone.

To arrange for a clinical examination of reading status, address The George Washington University Reading Clinic, 802 Twenty-first Street, NW., or telephone STerling 3-0250, Extension 491, for an appointment. The Clinic is open for appointments Monday through Friday, from 9:00 A.M. to 5:00 P.M.

A complete diagnostic examination usually requires the greater part of a day. When completed, a written report is given and a conference arranged at which disabilities are discussed in detail and suggestions for corrective work are outlined. The fee is $30.

SPECIAL CURRICULA

The School of Education provides special curricula for liberal arts graduates, housewives, and retired military personnel who wish to prepare for teaching. It also provides a wide range of courses of interest to (1) emergency teachers who wish to qualify for teaching certificates and (2) teachers who wish to renew licenses.

REGULATIONS

Students in the School of Education are subject to, and are expected to familiarize themselves with, the general University regulations stated in the University catalogue.

ADMISSION

An applicant for admission must obtain from the Office of the Director of Admissions an application blank which he must fill out completely and return with the application fee of $10 if applying as a degree candidate, $5 if applying as a non-degree candidate.

Two recent photographs must accompany the blank.

Applications should be filed by July 1 for the fall semester, January 1 for the spring semester, and May 1 for the Summer Sessions.

ENTRANCE REQUIREMENTS

For the Bachelor's Degrees

Bachelor of Arts in Education, Bachelor of Science in Home Economics, Bachelor of Science in Physical Education.—An Associate in Arts degree based on the *Education* (see pages 13–15), *Home Economics*, or *Physical Education* curriculum in the Junior College, or the equivalent from another accredited higher institution, or a certificate of graduation from an approved normal school or the equivalent is required. The applicant must have a quality-point index of 2.00 (average grade of *C*) counting *Incomplete* grades as *F*. He must have demonstrated a genuine interest in teaching, possess personality traits that give promise of success as a teacher, and have an interview in the Office of the School of Education.

Applicants who have graduated from the Junior College or have attained equivalent standing at other accredited institutions, but have not completed satisfactorily all of the courses included in the Junior College curriculum which is prerequisite to the School of Education program contemplated, may be admitted to the School of Education with deficiencies. Such deficiencies must be removed before graduation and in the sequence prescribed by the student's adviser.

ADVANCED STANDING

An applicant for advanced standing may be considered for admission upon presentation of satisfactory credentials from an accredited institution of higher learning. The student must be in good standing as to scholarship and conduct and must be eligible to return to the previously attended institution in the semester for which he seeks admission to this University. Credit for transferred work will be assigned by the School of Education to the extent that it meets the requirements for the degree sought at this University and subject to the University regulations concerning satisfactory subsequent work.

For the Master's Degree

Master of Arts in Education.—To be admitted to candidacy for the degree of Master of Arts in Education the applicant must: (1) hold a Bachelor's degree from an accredited institution; (2) have an undergraduate quality-point index of 2.50 or above ($C +$ average); (3) have demonstrated a genuine interest in teaching; (4) be in possession of personality traits that give promise of better-than-average success as a teacher.

To be admitted to candidacy in programs designed to prepare for service in guidance and administration two years of successful teaching experience are prerequisite. Candidates who have had no professional courses must satisfactorily complete the required undergraduate professional courses, including Observation and Student Teaching, in addition to graduate course requirements.

ADVANCED STANDING

Graduate work completed in other accredited institutions of learning may be credited toward the Master's degree, but a minimum of 30 semester hours must be completed in the School of Education of The George Washington University. Not more than 9 semester hours of the minimum 30-hour requirement may be taken in off-campus courses.

Advanced courses completed in excess of the requirements for the Bachelor's degree in this University may be credited toward the Master's degree to the extent of 12 semester hours, provided the work fits in with the student's plan of specialization and is approved in writing by the Dean before being undertaken.

In determining advanced standing at the time of admission or readmission to Master's candidacy at this University, graduate work completed more than three years previously is not counted.

For the Advanced Professional Certificate

A Bachelor of Arts degree in Education or Bachelor of Science degree in Physical Education from the School of Education, or the equivalent from another institution of higher learning; a Master's degree, from an accredited institution, at least two years of successful teaching experience, and a permanent teaching or administrative license are required. The applicant who is unable to meet the admission requirements may be admitted with deficiencies to be met by satisfactorily completing prerequisites in addition to the specified program of graduate study. Each applicant must be interviewed by a member of the Faculty of the School of Education. The applicant seeking to qualify for a higher level in the local salary scale must have his program approved by the appropriate representative of the school system employing him.

ADVANCED STANDING

Appropriate graduate work completed in other accredited higher institutions may be credited toward the requirements for the Certificate. In determining advanced standing at the time of admission or readmission to Certificate candidacy, graduate work completed more than three years previously is not counted.

For the Degree of Doctor of Education

The candidate for the degree of Doctor of Education must have completed graduate work in fields prerequisite to his objective, equivalent to that required for the degree of Master of Arts in Education in The George Washington University, and at least three years of successful educational experience.

REGISTRATION

Before a student may be admitted to registration he must have satisfied the Office of the Director of Admissions that he is qualified to enter the University.

A student who has previously matriculated in the University, but who has not been in attendance during the semester prior to registration, should file an application for readmission in advance of registration.

Registration is for the semester unless otherwise indicated on the registration paper. No registration is accepted for less than a semester or one summer session.

A student may not register concurrently in The George Washington University and another institution without the permission of the Dean. Allowance of credit for work done concurrently will be at the discretion of the Committee on Admission and Advanced Standing.

FEES AND FINANCIAL REGULATIONS

By authorization of the Board of Trustees, the following fees have been adopted:

TUITION FEES	
For each semester hour for which the student registers (except work taken by a candidate for a Doctor's degree)	$20.00
For the degree of Doctor of Education	
For work* leading to and including the general examination	600.00
For work leading to and including the final examination	600.00

ADDITIONAL COURSE FEES

In certain courses additional fees, such as laboratory and material fees, are charged as indicated in the course descriptions. These fees are charged by the semester and, unless otherwise indicated, may be defrayed in three payments when the tuition is paid in this manner. Breakage of apparatus is charged against the individual student. When breakage is in excess of the normal amount provided for in the laboratory fee the individual student will be required to pay such additional charges as are determined by the department concerned.

GRADUATION FEES:	
Wherein a degree is conferred	25.00
Wherein an Advanced Professional Certificate is conferred	25.00
FEE FOR BINDING MASTER'S THESIS	6.00
FEE FOR PRINTING SUMMARY OF DOCTORAL DISSERTATION	85.00
SPECIAL FEES	
Application fee, charged each applicant for admission as a degree candidate, nonrefundable	10.00
Application fee, charged each applicant for admission as a non-degree candidate, nonrefundable	5.00
Late-registration fee, charged each student who fails to register within the designated period	5.00
Change fee, charged each student for each change in program involving one or more than one course	2.00
Withdrawal fee, charged each student who preregisters and withdraws prior to the regular registration	5.00
Service fee, charged each student for late payment of tuition (see "Payment of Fees")	2.00
Reinstatement fee, charged each student who is reinstated after suspension for delinquency in fees	5.00
Residence fee, charged each student wishing to maintain "in residence" status during any semester of absence from the University or after completion of tuition requirements	20.00
For special physical examination	2.00
For each examination to qualify for advanced standing and for each special examination	5.00
Laboratory checkout fee, charged each student in chemistry courses who fails to check out of the laboratory by the time set by the instructor	3.00
Transcript fee, charged for each transcript of record after the first	1.00

Registration in the University entitles each student to the following University privileges: (1) the issuance of one certified transcript of record, if and when desired; (2) the services of the Placement Office;

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*This fee does not cover the cost of tuition for elementary courses (numbered 1–100).

(3) the use of University library facilities, except as otherwise designated; (4) gymnasium privileges; (5) admission to all athletic contests, unless otherwise specified; (6) subscription to the *University Hatchet*, the student newspaper; (7) admission to University debates; (8) medical attention and hospital services as described in the General Catalogue. These privileges, with the exception of the issuance of transcripts, terminate, and a student is no longer in residence, when he withdraws or is dismissed from the University.

Payment of Fees

All fees are payable at the Office of the Cashier, 725 Twenty-first Street NW. No student is permitted to complete registration or to attend classes until all fees are paid. Fees for each semester are due and payable in advance at the time of registration.

In exceptional cases, subject to the approval of the Treasurer, the student may sign a contract for semester charges, except for fees payable in advance, permitting payments as follows:

Fall Semester.—One-third at the time of registration; one-third on November 3; one-third on December 1.

Spring Semester.—One-third at the time of registration; one-third on March 2; one-third on April 1.

A student who fails to meet payments when due, but who pays his fees from the fourth to the fifteenth of the month in which payment is due, is charged a service fee of $2. A student who fails to meet payments by the fifteenth of the month in which payment is due will be automatically suspended and may not attend classes until he has been officially reinstated and has paid all accrued fees and a reinstatement fee of $5.

A student suspended for failure to meet payments when due may not be reinstated for the semester after two weeks from the date of suspension. Applications for reinstatement are to be made to the Office of the Cashier.

An auditor pays all fees chargeable to the student registered for credit except the late-registration fee.

Withdrawals and Refunds

Application for withdrawal from the University or for change in class schedule must be made in person or in writing to the Dean. Notification to an instructor is not an acceptable notice.

In authorized withdrawals and changes in schedules, financial adjustments will be made as follows:

Fall Semester.—Withdrawal dated on or before October 31, cancellation of two-thirds of tuition charges; withdrawal dated on or before

November 30, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to November 30.

Spring Semester.—Withdrawal dated on or before February 28, cancellation of two-thirds of tuition charges; withdrawal dated on or before March 31, cancellation of one-third of tuition charges. No refund or reduction will be allowed on a withdrawal dated subsequent to March 31.

In no case will a refund be made of the first third of the total tuition charges unless the registration is in advance and is cancelled before the regular registration day. In this case a withdrawal fee of $5 is charged and tuition fees refunded. In no case will tuition be reduced or refunded because of nonattendance upon classes.

Payment applies only to the semester for which a registration charge is incurred and in no case will this payment be credited to another semester.

Any student in chemistry who fails to check out of the laboratory on or before the date set by the instructor, unless excused by the instructor, will be charged a checkout fee in the amount of $3. A student who drops a course before the end of the semester must check out of the laboratory at the next regular laboratory period.

Any student enrolled in the Air Force ROTC who fails to turn in uniforms, equipment, and textbooks, on separation from the Corps, will be charged the value of the missing items.

Authorization to withdraw and certification for work done will not be given a student who has not a clear financial record.

AMOUNT OF WORK

Fifteen to 17 semester hours constitute a normal program. A student with a quality-point index of 3.00 or higher, may, with the permission of the Dean, enroll for 18 or 19 hours. No student may enroll for more than 19 hours, except by permission of the Committee on Scholarship.

A student with extracurricular employment of 15 hours or less a week is permitted to carry a normal program of college work.

A student with extracurricular employment of from 16 to 25 hours a week may enroll for 12 or 13 hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 15 or 16 hours.

A student with extracurricular employment of from 26 to 34 hours a week may enroll for 9 or 10 semester hours. Such a student with a quality-point index of 3.00 or higher may, with special permission of the Dean, enroll for 12 or 13 hours.

A student with extracurricular employment of 35 hours or more a week may enroll for 6 or 7 hours. Such a student with a quality-point index of

3.00 or higher may, with special permission of the Dean, enroll for 9 or 10 hours.

A student who increases his hours of employment subsequent to registration or at any time during a semester is required to report that fact immediately to the Dean so that his program may be brought within the limitations outlined above.

ATTENDANCE

A student is not permitted to attend classes until registration has been completed and fees due have been paid. Regular attendance is required. A student may be dropped from any course for undue absence.

PROBATION

An undergraduate student who fails to maintain a quality-point index of at least 2.00 will be placed on probation. A student remains on probation as long as his quality-point index is below 2.00, or until his probation is removed by the Committee on Scholarship.

SUSPENSION

An undergraduate student on probation who fails to raise his quality-point index to 2.00 within the time specified by the Committee on Scholarship may be suspended. An undergraduate student who fails to make passing grades in one-half or more of a minimum of 16 semester hours of course work may be suspended.

A student who has been suspended, either for delinquency in payment of fees or for any other reason, is not permitted to attend classes during the period of suspension.

A student who has been suspended for poor scholarship may within ten days appeal his case to the Committee on Scholarship through the Dean. If the case appears to be remediable and the student appears likely to improve in his scholarship thereafter, the Committee may readmit him on probation. A student who has been denied readmission on probation may petition the Committee on Scholarship through the Dean for readmission after the lapse of a calendar year. A student who has been suspended twice will not be readmitted.

WITHDRAWAL

Withdrawal from a course or from the University, *without academic or financial penalty,* requires the permission of the Dean. Permission to withdraw from the University will not be granted a student who has not a clear financial record.

Withdrawal between October 31 and the end of the fall semester and between February 28 and the end of the spring semester is permitted only in exceptional cases.

All charges for courses dropped without the approval of the Dean must be met by the student. Reporting the dropping of a course to an instructor does not effect its discontinuance.

CHANGES IN PROGRAM OF STUDIES

Changes within the School.—A student may not change or drop courses (see "Withdrawals", above) or change his status to that of auditor except with the approval of the Dean, upon presentation of adequate reasons for such changes.

Change from one section to another of the same course may be made with the approval of the Dean and the department concerned.

Change from one major subject to another within the same college or school may be made with the approval of the Dean. All requirements specified in the course of study to which the change is made must be satisfied before graduation.

Transfers within the University.—Transfer from one college, school, or division to another may be made only with the approval of the deans concerned. Application for transfer must be made to the Director of Admissions on the proper form provided by his office.

Students wishing to transfer from the Division of University Students or the Division of Special Students to the School of Education should note that a maximum of 45 semester hours will be accepted in transfer.

In order to provide degree candidates with proper academic counsel and the benefits of integrated programs of study, the faculties of the various schools and colleges have established minimum residence requirements and regulations with regard to supervision of the work done in the student's major field. In addition, various special regulations regarding course sequence, selection of electives, and advisory approval of programs apply in particular curricula. Students transferring within the University are advised to study carefully the graduation requirements and to note that in all undergraduate divisions 30 semester hours must be completed *in residence* in the school or college from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly all the requirements he must fulfill.

SUMMER SCHOOL CREDIT

A student who plans to attend summer school sessions at another institution with the intention of having credits so obtained apply toward graduation from this University must first secure the written approval of the Dean. In no event will such credits be recognized to an amount in excess of that which might be earned in a similar period in this institution.

GRADUATION REQUIREMENTS

To be recommended for graduation a student must have met the admission requirements of the college or school in which he is registered, completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree for which he is registered, and be free from all indebtedness to the University.

Application for Graduation.—Application for a degree should be filed in the Office of the Registrar at the time of registration for the last semester of the senior or final year.

Scholarship.—The undergraduate student must maintain a quality-point index of at least 2.00.

Candidates for the Master's degree and the Advanced Professional Certificate must obtain at least a grade of *Satisfactory* (*B* level) on each course of the required minimum graduate program and must maintain a quality-point index of at least 2.50 on all prerequisite courses.

Residence.—The undergraduate student and the Master's candidate must complete a minimum of one year or 30 semester hours in residence. Not more than 9 hours of this requirement may be satisfied by off-campus courses. Summer work may be counted in residence, but in no case may the period of residence aggregate less than thirty weeks. Unless special permission is granted by the Dean to pursue work elsewhere, the work of the senior or final year must be completed in residence.

Candidates for the Advanced Professional Certificate must meet a minimum residence requirement of 18 semester hours taken on campus.

Degree candidates are expected to maintain continuous residence by registering for at least one course in each of two of the three terms (fall, spring, summer). Candidates who are unable to enroll for a course but wish to use the library facilities and consult staff members may, with the permission of the Dean, register "in residence" by paying the residence fee. Candidates, who for reasons beyond their control, must temporarily discontinue their studies may be granted leave of absence for one or two terms, on petition to the Dean's Council.

Attendance and Conduct.—The University reserves the right to refuse to confer a degree upon a candidate whose attendance or conduct has been unsatisfactory.

Presence at Graduation.—A candidate is required to be present at the graduation exercises unless written application for graduation in absentia is approved by the Dean.

THE LIBRARY

A student registered in the University is entitled to the reference use of the University Library. The Student Identification Card, issued upon the payment of fees, must be presented as identification.

Library books, with the exception of those in the Law and Medical collections, may be drawn for home use for a period of two weeks. Any book which does circulate is subject to recall by the Librarian at any time. Reserve books and periodicals for collateral reading must be used in the reading rooms when the Library is open. With special permission they may be drawn for overnight use when the Library closes. A fine of twenty-five cents will be charged for the first hour or fraction of an hour and five cents for each hour or fraction thereafter that a reserve book is overdue. Grades of a student will be withheld until his library record is clear.

Hours

The University Library is open from 9:00 A.M. to 10:00 P.M. each class day (Saturday 9:00 A.M. to 5:00 P.M.), and from 2:00 to 6:00 P.M. on Sunday.

RIGHT TO DISMISS STUDENTS

The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable to do so.

RIGHT TO CHANGE RULES

The University and its various colleges, schools, and divisions reserve the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine.

PROPERTY RESPONSIBILITY

The University is not responsible for the loss of personal property in any University building. A "Lost and Found" Office is maintained in the Student Union.

COURSES OF INSTRUCTION

The University reserves the right to withdraw any course announced.

Explanation of Course Numbers

First-group courses.—Courses numbered from 1 to 100 are planned for students in the freshman and sophomore years. With the approval of the adviser and the Dean, they may also be taken by juniors and seniors. In certain instances, they may be taken by graduate students to make up undergraduate deficiencies or as prerequisite to advanced courses, but they may not be credited toward a higher degree.

Second-group courses.—Courses numbered from 101 to 200 are planned for students in the junior and senior years. They may be credited toward higher degrees only when registration for graduate credit has been approved before the mid-point of the course by the Dean of the School of Education and by the officer of instruction concerned, and when the completion of additional work has been certified by the officer of instruction.

Third-group courses.—Courses numbered from 201 to 300 are planned primarily for graduate students. They are open, with the approval of the officer of instruction, to qualified seniors.

Indication of the Amount of Credit

The number of semester hours of credit given for the satisfactory completion of a course is indicated in parentheses after the name of the course. Thus, a year course giving three hours of credit each semester is marked (3–3), and a semester course giving three hours of credit is marked (3).

DEPARTMENT OF EDUCATION

Courses offered by the Department of Education are of two types: those designed for the preservice education of candidates and those planned for the inservice education of teachers, counselors, and administrators.

Preservice courses devote two or three hours a week to lecture and discussion supplemented by a minimum of two hours a week of related field work. A clinical approach to the study of educational problems is used—lectures and discussions revolving around observed practices.

Inservice courses meet once a week for a two-hour period. Class work is supplemented by extensive reading assignments, the preparation of reports, and field work. A student enrolled in one of these courses should plan to devote not less than seven hours a week, exclusive of class time, to the work of the course.

Ample opportunity is provided to study teaching or administrative problems of special interest. To enable students to consult with instructors regarding individual problems, a conference hour is scheduled immediately before or after the class period.

Only the courses designed to provide professional information and skills are listed below. For courses needed for general education or teaching-field preparation, see the general catalogue. In addition to courses offered in the Department of Education a number of professional courses for teachers are offered in the departments of Psychology, Speech, and Statistics. These are listed below together with courses offered by the Department of Education.

Whenever possible, the exact hour of class meeting is stated. Hours for classes not yet scheduled may be found in the Schedule of Classes for the semester concerned.

First Group

Education A *Reading Clinic* Coleman and Staff

Diagnosis of reading difficulties; individual or group lessons without academic credit. Fee: for diagnosis, $30; for individual lesson, $4; for group lesson, $2.50; material fee, $4.

Psychology 22 *Introduction to Educational Psychology* (3) Lindley, Faith

Fall—evening; spring—morning; summer 1958.

Consideration of individual and group differences, adjustments, and the psychology of learning in relation to education and training.

Psychology 29 *Child Psychology* (3) E. Johnson

Fall—evening; spring—morning; summer 1958.

A genetic approach to the study of the child. Special emphasis is placed on the socialization process, learning, and the child's view of the world.

Statistics 53 *Introduction to Statistics in Psychology and Education* (3) The Staff

Lecture (2 hours), laboratory (2 hours).

Fall: lecture—morning and evening, laboratory—afternoon and evening; spring—morning; summer 1958.

Sources of data, tabulation, charts and graphs, averages, dispersion, quartiles and percentiles, raw scores and derived scores, profiles, norms and their use, frequency distribution, intelligence and other quotients, reliability and validity of tests, normal curve, correlation, elementary sampling, statistical error, limitations of statistics. Prerequisite: one entrance unit in algebra. Laboratory fee, $9.

SECOND GROUP

Statistics 105 *Statistics in Psychology and Education* (3) McCall

Spring: lecture (2 hours), laboratory (2 hours)—morning.

Advanced study of statistical techniques necessary for an application of statistics in research problems. Analysis of variance, correlation techniques, chi-square applications, and sampling theory. Applications to specific problems utilizing case method of study in so far as possible. Original work is required of each student. Prerequisite: Statistics 53. Laboratory fee, $9.

Education 109–10 *Learning and Teaching* (3–3) McCauley

Lecture (2 hours), conference (1 hour), field work (2 hours)—as arranged.

First half—Fall: section A: M 1:10–3 P.M., section B: W 6:10–8 P.M.; summer 1958 (Detwiler).

Second half—Fall: 1:10–3 P.M.; spring: section A: M 1:10–3 P.M., section B: W 6:10–8 P.M.; summer 1958.

For the general student as well as the prospective teacher. *First half:* nature of learning approached through the study of classroom situations. *Second half:* nature of teaching approached through observation of classroom situations.

Education 111 *Methods in Elementary Education* (6) LaBue

Fall—TTh 9 A.M.–4:30 P.M.

For seniors in the elementary school curriculum. An integrated methods course dealing with the learning experiences designed to meet the developmental needs of children in the social sciences, the language arts, and concepts of number. Also includes the study of general classroom procedures and the evaluation of pupil progress. To be taken concurrently with Education 133. Prerequisite: Education 109–10 and 121–22.

Education 113 *Elementary School Art* (3) Nowlin

Fall—Th 6:10–9 P.M., field work—as arranged; spring—T 6:10–9 P.M., field work—as arranged; summer 1958 (Crump).

For undergraduates in the elementary school curriculum and teachers. Materials and methods. Prerequisite: Psychology 1 and 29. Material fee, $4.50.

Education 114 *Elementary School Music* (3) Reed

Spring—T 7:35–9:35 P.M., field work (2 hours)—as arranged; summer 1958.

For undergraduates in the elementary school curriculum and teachers. Materials and methods. Prerequisite: Psychology 1 and 29.

Education 115 *Teaching of Reading in the Elementary School* (3) Hanigan

Fall—W 7:10–9:10 P.M., field work (2 hours)—as arranged; summer 1958.

A basic course in methods, techniques, materials, and activities essential to a good elementary school reading program. Prerequisite: Education 109–10 and 121–22 or teaching experience.

Education 116 *Elementary School Social Studies* (3) St. Cyr

Spring—F 7:10–9:10 P.M., field work (2 hours)—as arranged; summer 1958.

For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 109–10 and 121–22 or teaching experience.

Education 117 *Elementary School Science* (3) St. Cyr

Fall—F 6:10–9 P.M., field work—as arranged; summer 1958.

For undergraduates in the elementary school curriculum. Content, methods, materials, and activities. Prerequisite: Education 109–10 and 121–22 or teaching experience.

Education 120 *Elementary School Arithmetic* (3) St. Cyr

Spring—Th 7:35–9:35 P.M., field work (2 hours)—as arranged.

For teachers. Content, methods, materials, and activities essential in the elementary school curriculum. Prerequisite: Education 109–10 and 121–22 or teaching experience.

Education 121–22 *Society and the School* (3–3) St. Cyr

Lecture (2 hours), conference (1 hour), field work (2 hours)—as arranged.

First half—Fall: section A: W 1:10–3 P.M.; section B: M 6:10–8 P.M.; summer 1958. *Second half*—Fall: Th 1:10–3 P.M. (Angel); spring: section A: W 1:10–3 P.M.; section B: M 6:10–8 P.M.; summer 1958 (Angel).

For the general student as well as the prospective teacher. *First half:* the historical and sociological development of education at local, national, and international levels; cooperation of the school with other community agencies. *Second half:* organization and operation of schools; principles and functions; role of the teacher.

Psychology 121 *Educational Psychology* (3) Faith

Fall—as arranged; spring—as arranged.

Advanced course in educational psychology. Admission by permission of the instructor.

Education 128 *Children's Literature* (3) Walker

Spring—M 7:10–9:10 P.M., field work (2 hours) as arranged.

For undergraduates in the elementary school curriculum and teachers. Exploring and evaluating the newer books for children and the children's classics, understanding the contribution of literature in child development, appreciating children's original expressions. Prerequisite: Psychology 1 and 29.

Psychology 129 *Introduction to Counseling and Guidance* (3)

Dreese

Fall—evening; summer 1958.

A survey of the basic principles, techniques, and procedures as applied to vocational, educational, and personal counseling.

Education 131 *Common Teaching Skills* (3)

Detwiler

Fall—TTh 12:30–1:45 P.M.; spring—MTh 4:30–5:45 P.M.

For seniors in the secondary school curriculum. Course, unit, and lesson planning; practical techniques used in connection with motivation, the assignment, group procedures, directing study, individual differences, evaluation, clerical routines, discipline, the homeroom, activity sponsorship, public relations. Prerequisite: Education 109–10 and 121–22.

Psychology 131 *Psychological Tests* (3)

Hunt, Hill

Fall—morning; spring—evening; summer 1958.

A survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee, $7.

Education 133–34 *Observation and Student Teaching* (3–3 to 6)

Detwiler, LaBue, McCauley

A year course: credit is not given for the first half until the second half is completed.

133A and 133B: fall—as arranged; 133C: spring—as arranged; 134A, 134B, and 134C: spring—as arranged.

For seniors in the elementary or secondary school curriculum. Section A is a year course for students in the elementary school curriculum. Section B is a year course for students in the secondary school curriculum. Section C is for students enrolled in the intensive program. Education 134 student-teaching fee, $50. Admission by permission of the instructor. Prerequisite: Education 109–10 and 121–22.

Psychology 141 *Leadership, Group Behavior, and Student Life* (3)

Faith

Fall—morning.

A survey of the foundations of leadership, of the factors which underlie effective participation in group activities, and of the interrelations between the student and his university.

Psychology 144 *Personnel Psychology* (3)

Hubbard

Fall—evening; spring—evening; summer 1958.

The applications of psychology to personnel work in education, business, industry, and government.

SPECIAL METHODS COURSES *

To be elected in the senior year after substantial preparation in the teaching fields concerned by the students in the secondary school curriculum. Course requirements and hours of credit vary with license requirements. Practices of successful teachers are studied and actual teaching content as found in current texts and courses of study is reviewed.

Education 136 *Teaching English* (2 to 4) Lumsden

Spring—M 7:10–9:10 P.M., field work (2 hours)—as arranged.

Prerequisite*: eighteen semester hours in English.

Education 138 *Teaching Social Studies* (2 to 4) Root

Spring—T 7:10–9:10 P.M., field work (2 hours)—as arranged.

Prerequisite*: twenty-four semester hours of social studies.

Education 140 *Teaching Mathematics* (3) ————

Spring—T 5:10–7 P.M.

Prerequisite*: Mathematics through calculus.

Education 144 *Teaching Science* (2 to 4) ————

Spring—Th 5:10–7 P.M., field work (2 hours)—as arranged.

Prerequisite*: twenty-four to forty semester hours of science.

Education 146 *Teaching Foreign Languages* (2 to 4) McSpadden

Spring—T 5:10–7 P.M.

Prerequisite*: eighteen semester hours of one foreign language.

Education 148 *Teaching Home Economics* (2) Kirkpatrick

Spring—as arranged.

Prerequisite*: thirty semester hours of Home Economics.

Education 150 *Teaching Business Subjects* (2) Shott

Spring—as arranged.

Prerequisite*: thirty semester hours of business education.

Speech 175–76 *Speech Correction* (3–3) Pettit

Academic year—evening.

A study of the causes of the disorders of speech with emphasis on methods in diagnosis and treatment of defective speech. Admission by permission of the instructor.

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* Prerequisite to all special methods courses: Education 109–10, 121–22, and 131. Additional prerequisites are stated under each course.

THIRD GROUP*

Education 201–2 *Learning and Teaching* (3–3)

Lecture (2 hours), conference (1 hour), field work (2 hours)—as arranged.
Academic year—M 7:10–9:10 P.M.
For graduate students. *First half:* nature of learning approached through the study of classroom situations. *Second half:* nature of teaching approached through observation of classroom situations.

Education 203–4 *Comparative Education* (3–3)

Academic year—Th 7:35–9:35 P.M.
Comparison of foreign educational systems with those of the United States; particularly those of Russia, West Germany, Denmark, Switzerland, France, the British Isles, Canada, and Australia. Bish

Education 205–6 *The Curriculum*† (3–3)

Academic year—S 11:10 A.M.–1 P.M.
For experienced teachers. *First half:* curriculum foundations and issues; comparison of curriculum patterns. *Second half:* principles and procedures in curriculum development; group consideration of student problems. Bish

Education 207 *Curriculum Materials*† (3)

Summer 1958.
For experienced teachers. Construction of courses of study, resource units, classroom teaching aids, and inexpensive materials; direct application to students' own situations. McCauley

Education 209 *Child Growth and Development* (3)

Fall—S 9:10–11 A.M.; summer 1958 (LaBue).
An interdisciplinary approach to child development taking into account such factors as society and culture, socialization, and socializing agents with particular emphasis on the home and school. McCauley

Education 210 *Adolescent Growth and Development* (3)

Spring—S 9:10–11 A.M.
A consideration of physical, intellectual, and cultural backgrounds of adolescence with particular emphasis on social development, adjustment to organized society, educational development, and adjustment to school and home relationships.

Education 211 *Evaluation in Education*† (3)

Fall—T 7:35–9:35 P.M.; summer 1958 (as Education 212) (McCauley).
Concept of evaluation, relationship between evaluation of ends and means, steps involved in the evaluation of learning outcomes. As the

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* A degree from an accredited institution is prerequisite to all third-group courses.
† Prerequisite: adequate professional preparation.

course progresses each student develops solutions for evaluation problems related to his work situation.

Education 212 *Educational Measurement** (3) McCauley

Spring—T 7:35–9:35 P.M.

Basic measurement techniques; construction, selection, administration and interpretation of objective and essay-type examinations; statistical analysis of test results; laboratory experiences in the use of test instruments.

Education 213–14 *History of Education* (3–3) Jarman

Academic year—T 7:35–9:35 P.M.

First half: the European backgrounds of American education. *Second half:* the evolution of the American school system.

Education 215 *Education of Exceptional Children** (3) LaBue

Fall—Th 7:35–9:35 P.M.; summer 1958.

For classroom teachers. A survey of current problems in the education and guidance of exceptional pupils. Nature and needs of those physically, mentally, or emotionally handicapped; needs of the gifted. Resources for help in correction, diagnosis, therapy, education, and guidance.

Education 216 *Education of Slow-learning Children** (3) LaBue

Not offered 1958–59.

Identification, nature, and needs of slow-learning elementary and junior high school children. Emphasis on diagnosis and treatment of learning difficulties.

Education 217–18 *Contemporary Problems in Education** (3–3) Jarman

Academic year—M 7:10–9:10 P.M.; summer 1958—Education 218 (3).

First half: designed to help students formulate a personal philosophy of education. *Second half:* social foundations of education—a study of the forces that shape the policies and offerings of the school.

Education 219 *Elementary School Classroom Procedures** (3) LaBue

Summer 1958.

Current classroom practices with particular emphasis on ways of planning, unit teaching, techniques in discipline; individual and group evaluation techniques, resources for learning, providing for individual differences.

Education 221 *Early Childhood Education** (3)

Not offered 1958–59.

For experienced teachers. Emphasis on methods, materials, and learning experiences designed to meet the developmental needs of kindergarten and primary-grade children. Coleman

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*Prerequisite: adequate professional preparation.

Education 223–24 *Reading Problems** (3–3)

Academic year—Th 7:10–9:10 P.M.

For experienced teachers. Study of reading difficulties on elementary and secondary school levels; application of clinical procedures and techniques in solving classroom problems. Coleman

Education 225 *Elementary School Reading* (3)

Summer 1958.

Developmental and remedial approaches to reading problems. Demonstrations of diagnostic and corrective techniques used in the Reading Clinic. Caldwell

Psychology 225 *Seminar: Mental Hygiene* (3)

Fall—evening; summer 1958.

A study of mental health problems with special attention to programs of prevention. E. Johnson

Psychology 226 *Seminar: Clinical Psychology of Childhood* (3)

Spring—evening.

A survey of children's behavior and personality disorders. LaBue

Education 227 *Basic Issues in Elementary Education** (3)

Fall—M 7:10–9:10 P.M.

A consideration of basic issues in the purposes, organization, and conduct of elementary education. Emphasis on the philosophical and psychological roots of fundamental assumptions as they relate to classroom practices. Dreese

Psychology 227 *Seminar: Counseling and Guidance* (3)

Spring—evening.

Recent developments and current problems in vocational, educational, and personal guidance in various types of agencies with particular reference to education. Prerequisite: educational or psychological measurements and Psychology 129 or the equivalent. LaBue

Education 228 *Instructional Areas in Elementary Education** (3)

Spring—M 7:10–9:10 P.M.

Critical appraisal of the objectives, organization, content, and teaching methods in the language arts, arithmetic, social studies, science, arts and crafts, health and physical education.

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* Prerequisite: adequate professional preparation.

Psychology 228 *Seminar: Techniques of Counseling* (3) Dreese

Spring—evening.

Specific types of vocational, educational, and personal counseling problems approached through the case method. Prerequisite: recent previous course in counseling and guidance and familiarity with individual analysis methods.

Education 229 *Administration of Elementary Education** (3) LaBue

Spring—Th 7:35–9:35 P.M.; summer 1958 (Tyler).

For experienced teachers and administrators. Administration as a means of achieving instructional objectives, organizing learning and teaching activities, handling supplies and equipment, maintaining the building, and integrating school and community life. Emphasis upon guide lines to action.

Psychology 229 *Seminar: Occupational and Educational Information* (3) Faith

Spring—evening.

Designed to acquaint vocational and educational counselors with the basic occupational and educational information necessary in counseling. Sources of data and techniques of collecting, analyzing, and disseminating for purposes of guidance.

Education 231 *Secondary School Classroom Procedures** (3) Giancaspro

Fall—Th 7:35–9:35 P.M.; summer 1958 (Bish).

Survey of current classroom practices with particular attention to selected topics such as teacher-pupil planning, group procedures, pupil security, initiatory and culminating activities, individual and group evaluation techniques, teaching aids, etc.; review of recent literature.

Psychology 231 *Test Construction* (3) Hunt

Fall—evening.

The principles underlying test construction; statistical techniques in the construction, evaluation, and standardization of psychological, educational, and vocational tests. Prerequisite: a course in tests and measurements and an elementary course in statistics.

Psychology 232 *Research: Test Construction* (3) Hunt

Fall—as arranged; spring—as arranged.

Individual projects in construction and evaluation of psychological, educational, or vocational tests. Prerequisite: Psychology 231 and permission of the instructor.

Education 233 *Audio-visual Education** (3) J. Johnson

Spring—T 6:10–9:00 P.M.

Role of audio-visual materials in learning; selection, evaluation, and use of materials; administrative problems in the care, operation, maintenance, and use of audio-visual materials and equipment. Material fee, $7.

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*Prerequisite: adequate professional preparation.

E. Johnson

Psychology 233 *Individual Psychological Testing* (3)

Fall—afternoon; spring—afternoon.

Instruction and practice in giving of the Binet Test and the Wechsler tests. Prerequisite: an elementary course in tests and measurements. Material fee, $7.

Faith

Psychology 236 *Seminar: Analysis of the Individual for Purposes of Counseling* (3)

Fall—evening.

A detailed study of individual analysis techniques with practice in handling such methods. Prerequisite: an introductory course in educational or psychological measurements.

St. Cyr

Education 239 *Teaching the Core Curriculum** (3)

Fall—T 7:35–9:35 P.M.

An examination and study of classroom teaching procedures appropriate to the core program.

Education 241 *Education of the Gifted** (3)

Not offered 1958–59.

For classroom teachers. Nature and discovery of giftedness; provisions for the gifted in regular classes; experimental projects.

Marinaccio

Education 243 *Human Relations in the Classroom** (3)

Summer 1958.

Principles and practices involved in interpersonal relationships between learner and teacher and among learners.

Angel

Education 245 *School and Community** (3)

Spring—W 7:10–9:10 P.M.

The school as an important member of a team of social agencies that builds the community.

Detwiler

Education 251 *Guidance in Secondary Schools** (3)

Fall—M 7:10–9:10 P.M.; summer 1958 (Dreese).

Scope; needs; organization of the program; services to students, the instructional staff, and the administration; personnel needed for the program.

Bish, Root

Education 254 *The Junior High School** (3)

Not offered 1958–59.

Purposes, organization, core programs, guidance, developing course of study, extra-classroom activities.

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* Prerequisite: adequate professional preparation.

Education 255–56 *Secondary Education** (3–3) Root

Academic year—S 9:10–11 A.M.; summer 1958.

First half: current proposals for the improvement of secondary education. *Second half:* current problems in each of the subject-matter fields.

Education 259–60 *Secondary School Management** (3–3) H. Johnson

Academic year—S 9:30 A.M.–3 P.M.

For experienced teachers and administrators with two years of successful teaching in secondary schools. Management planning, execution, and control; criteria of good management; construction of the master schedule; leadership problems incident to the development of new policies and programs.

Education 263–64 *Employee Training* (3–3) Root

Academic year—W 7:10–9:10 P.M.

First half: nature and purpose, review of major programs—orientation, supervisory, apprentice, clerical, skills, communication. *Second half:* administrative problems and practices, training media, coordination with other management functions. Prerequisite: adequate professional preparation or two years of experience in employee training.

Education 265–66 *Teaching Secondary School English* (3–3)

Not offered 1958–59.

A refresher course for teachers of English. Discussion of new approaches to high school content. Offered in cooperation with the departments of English and Speech. *First half:* communication skills—structural linguistics, composition, and speech. *Second half:* American and English literature.

Education 267–68 *Teaching Secondary School Social Studies* (3–3) ________

Academic year—W 7:10–9:10 P.M.

A refresher course for teachers of the Social Studies. Discussion of new approaches to high school content. Offered in cooperation with the departments of History, Political Science, Geography, Economics, and Sociology.

Education 270 *Art Education* (3) Nowlin

Not offered 1958–59.

For experienced teachers. Basic philosophies of contemporary teachers of art; use of visual and tactile media; emphasis upon visual aids, displays, and use of community resources. Designed to increase awareness of the creative process. Prerequisite: Education 113. Material fee, $4.50.

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*Prerequisite: adequate professional preparation.

Fox

Education 271 *The Teacher and School Administration** (3)

Fall—W 7:10–9:10 P.M.; summer 1958.

A survey course for teachers and prospective administrators. Education and world affairs, national agencies, role of the state, local administration, school finance, legal controls, school plant, public support, democratic administrative procedures, improving teaching conditions.

Fox

Education 272 *The Teacher and School Supervision** (3)

Spring—W 7:10–9:10 P.M.

Nature, organization, human relationships, and techniques.

LaBue

Education 273–74 *Teacher Education** (3–3)

Not offered 1958–59.

First half: aims, objectives, and basic issues; study of outstanding and experimental programs. *Second half:* recruitment and selection, general education, teaching-field preparation, professional sequences, laboratory experiences.

Hutchins

Education 275 *School Finance** (3)

Summer 1958.

Educational financial theory, practice, and control, including methods of financing.

Root

Education 276 *Seminar: Public Relations in School Administration** (3)

Not offered 1958–59.

Purposes, gathering materials, disseminating agencies, publicity media, public participation in policy making.

Remmlein

Education 278 *School Law** (3)

Not offered 1958–59.

Sources and scope of school law; legal rights and responsibilities of teachers, pupils, and taxpayers. Other legal problems of major interest to the group.

Education 279–80 *Adult Education** (3–3)

Academic year—F 7:10–9:10 P.M.; summer 1958—Education 280 (3) (Kempfer).

First half: current concepts and objectives, agencies involved, programs on all levels—international through community. *Second half:* the adult as a learner, the teacher of adults, learning-teaching activities, administration of adult education programs.

Education 281 *Group Procedures in Education** (3)

Spring—W 7:10–9:10 P.M.; summer 1958 (Detwiler).

Theory, practice, evaluation, and application to all educational levels.

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* Prerequisite: adequate professional preparation.

Education 285 *Extra-classroom Activities*[*] (3) Root

Fall—T 7:35–9:35 P.M.; summer 1958 (Suber).

Nature and purposes of selected activities—homeroom, clubs, assemblies, school publications, student council, interscholastic contests; particular attention to sponsorship, participation, finance, and evaluation.

Education 287–88 *Clinical Study of Reading Problems*[*] (3–3) Coleman

Academic year—S 11:10 A.M.–1:00 P.M.

For advanced students. Diagnostic and corrective work under supervision in the Reading Clinic. Each student is expected to diagnose and treat pupils who are retarded in reading. Case studies are presented and criticized. Prerequisite: Education 223–24 or the equivalent. Material fee, $5 a semester.

Education 289–90 *Supervisory Problems in Reading*[*] (3–3) Coleman

Not offered 1958–59.

For experienced teachers, principals, supervisors, and superintendents. Considers the problems involved in planning, reorganizing, and improving the total reading program, in promoting cooperative effort on the part of the staff toward increasing teaching efficiency.

Education 291 *Planning the School Plant* (3) Hamon

Not offered 1958–59.

Selection of sites; evaluation of existing buildings; utilization of present facilities; adaptation to curricular needs; building, operation, and maintenance problems.

Education 293–94 *Research* (3–3) The Staff

Academic year—as arranged.

Individual research under the guidance of a member of the staff. Program and conferences arranged with an instructor.

Education 295 *Educational Research Methods and Procedures* (3) Fox

Fall—T 5:30–7:30 P.M.; spring—F 5:10–7:10 P.M.; summer 1958.

Required of all Master of Arts candidates following Plan 2. Knowledge of elementary statistics required.

Education 297 *Reading in Education* The Staff

Fall—W 5:10–6 P.M.; spring—W 5:10–6 P.M.; summer 1958.

To assist those preparing for the comprehensive examination. No credit toward degree requirements. Tuition fee, $20.

Education 299–300 *Thesis* (3–3) The Staff

Academic year—as arranged.

Required of all Master of Arts candidates following Plan 1.

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[*] Prerequisite: adequate professional preparation.

DEPARTMENTS OF PHYSICAL EDUCATION

The following courses are offered by the Department of Physical Education for Men and the Department of Physical Education for Women. Whenever possible the departments offer lecture courses jointly.

First Group

43–44 *Techniques of Physical Education Motor Activities* (2–2) The Staff

Academic year—section A (women), to be arranged; section B (men), morning.

Fundamental skills, rules, and organization. Locker and towel fee,* $4.50 a semester.

45–46 *Methods and Materials for Teaching Individual and Dual Sports in Secondary Schools* (2–2) (men) Hanken, Krupa

Academic year—afternoon.

Tennis, golf, swimming, wrestling, badminton, bowling. Locker and towel fee,* $4.50 a semester.

47 *Introduction to Physical Education* (2) Myers

Fall—morning.

An orientation course presenting the problems of physical education, vocational analysis, scientific foundations, and scope of field.

48 *Introduction to Recreation* (2) Hanken

Spring—as arranged.

The role of recreation in modern living; current practices in community recreation work; standards of training, experience, and salary; types of leadership.

49 *Human Anatomy* (3) Stallings

Fall—morning.

The structure of the human body. Basic course for physical education majors. Also open to both men and women not majoring in Physical Education. Prerequisite: Biology 1–2 or Zoology 1–2.

50 *Kinesiology* (3) Lawrence

Spring—morning.

A study of the anatomical mechanism of movement, analysis of the action of muscles in physical education activities. Prerequisite: an approved course in anatomy.

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* The locker and towel fee is required for registration in one or more of the activity courses.

51–52 *Methods and Materials for Teaching Physical Education Activities in Secondary Schools and Colleges* (2–2) (women) The Staff

Academic year—as arranged.

Team sports: basketball, hockey, softball, soccer, speedball, volleyball. Individual and dual sports: badminton, tennis, golf, archery, swimming and diving, life-saving and water safety. Group gymnastics. Tumbling. Locker and towel fee,* $4.50 a semester.

58 *First Aid and Care of Athletic Injuries* (2) DeAngelis, Lawrence

Spring—morning.

Prevention and emergency care of injuries of all types, with special reference to first aid, civil defense, bandaging, and massage. A practical course. Prerequisite: Biology 1–2 or Zoology 1–2.

SECOND GROUP

101 *Physical Education in the Elementary School* (3) Atwell, Burtner

Fall—afternoon and evening.

Physical growth and development of the child and adolescent. Survey of age characteristics and organization of physical education activities for the various age levels in elementary school, playground, and settlement house programs. Methods and materials of tumbling, games, dance, and self-testing activities.

103 *History and Principles of Physical Education* (3) Atwell, Krupa

Fall—morning.

Survey of history as it relates to contemporary physical education. Study of aims, objectives, and philosophy of physical education.

105–6 *Adapted Physical Education and Physical Examinations* (3–3) Lawrence

Academic year—morning.

Cause and correction of faulty body mechanics, physical examination methods for the diagnosis of postural defects, prescription of exercises, and program adaptation. Prerequisite: Physical Education 49 and 50.

107 *Techniques for Teaching Recreational Dance* (1 to 2) Burtner

Fall—morning.

Methods and materials for teaching the country and social dances of America and the folk dances of other countries to secondary school age and adult groups. Square-dance calling is included. Locker and towel fee,* $4.50.

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* The locker and towel fee is required for registration in one or more of the activity courses.

109–10 *Leadership Organization in the Intramural Program* (2–2) DeAngelis

Academic year—afternoon.

Principles of administration, organization, and supervision of intramural activities in the physical education program of the junior high school, senior high school, and college.

111–12 *Methods and Materials for Teaching Physical Education Activities in Secondary Schools and Colleges* (1 to 2–1 to 2) (women) The Staff

Academic year—morning.

Continuation of methods and materials in activities listed under Physical Education 51–52. Locker and towel fee,* $4.50 a semester.

113–14 *Methods and Practice in Teaching Physical Education Activities* (2 to 4–2 to 4) The Staff

Academic year—as arranged.

Principles and methods applied to learning and teaching physical education activities. Supervised laboratory. Locker and towel fee,* $4.50 a semester.

115–16 *Methods and Materials for Teaching Team Sports in Secondary Schools* (2 to 4–2 to 4) (men) DeAngelis, Hanken

Academic year—morning.

Football, basketball, baseball, track and field. Locker and towel fee,* $4.50 a semester.

117 *Methods of Teaching Modern Dance* (1 to 2) Burtner

1958–59 and alternate years: fall—afternoon.

Techniques for the teaching of movement as a medium of expression. Practical work in body technique, composition, and the analysis of accompaniment for dance including instrumental, voice, and percussion. Application is made to both secondary school and adult age levels. Locker and towel fee,* $4.50.

118 *Dance Production* (1 to 2) Burtner

1958–59 and alternate years: spring—afternoon.

Choreography for dance concerts, musicals, and plays. The planning and staging of dance for TV, dance demonstrations, and folk festivals. Lighting, costuming, sets, make-up for dance performances. Locker and towel fee,* $4.50.

121 *School and Community Health Programs* (3) Krupa and Staff

Fall—afternoon.

Health services, healthful environment, health instruction, sources of material for general health knowledge. Prerequisite: Biology 1–2 or Zoology 1–2.

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* The locker and towel fee is required for registration in one or more of the activity courses.

122 *Methods and Materials for Health Education* (3) Atwell

Spring—evening.

Methods and materials for teaching health at each age level. Prerequisite: Biology 1–2 or Zoology 1–2.

131 *Tests and Measurements in Physical Education* (3) Krupa

Fall—morning.

Critical survey of tests in physical activities, methods of test construction, elementary statistics.

132 *Camp Leadership* (1) Atwell, Stallings

Spring—afternoon.

Survey course in camp counseling.

133–34 *Observation and Student Teaching* (3–3 to 6) Atwell, Myers

First half: fall and spring—as arranged. *Second half:* fall and spring—as arranged.

Assignments are made to schools in Washington and the vicinity. Physical Education 134, student teaching fee, $50.

136 *Survey of Dance History and Dance Forms* (3) Burtner

Spring—evening.

The development of dance from primitive ritual to present day recreational and art forms of the dance. Includes ethnologic dance, practice and discussion of fundamental movement techniques, and composition.

138 *Organization and Administration of Physical Education* (3) Atwell, Myers

Spring—morning and evening.

Organization and administration of physical education programs in elementary and secondary schools and in colleges. Study of plants, fields, equipment, and programs.

151–52 *Recreational Leadership Activities* (1 to 3–1 to 3) Abernethy

1959–60 and alternate years.

Fall semester: basic skills for the pre-school and school-age child. Laboratory practice in crafts, music, dramatics, physical and social activities. Spring semester: basic skills for the teen-age and adult. Arts and crafts, dramatics, physical and social activities.

161 *Community Organization for Recreation* (3) Anderson

1958–59 and alternate years: fall—evening.

Resources, principles, and methods in organizing community recreation services.

162 *Administration of Community Recreation Programs* (3) Anderson

1958–59 and alternate years: spring—evening.

Factors and problems in administering recreation including surveys, legislation, program, area, facilities, leadership, finance, and public relations.

THE GEORGE WASHINGTON UNIVERSITY
WASHINGTON, D. C.

Report of the Treasurer

FOR THE YEAR ENDED
AUGUST 31, 1958

C Summary of Surplus 13
Notes to Financial Statements 14
D *Summary of Expendable Designated Funds* 16
E *Summary of Loan Funds Principal* 17
F *Summary of Endowment Funds Principal* 18
G *Summary of Plant Funds Principal* 19
H *Summary of Net Investment in Plant* 20

SCHEDULES

1 Current Income 22
2 Current Expense 30
3 Investments of Current Funds 42
4 Assets of Loan Funds 43
5 Assets of Endowment Funds 44
6 Endowment Funds—Held in Trust by Others 58
7 Assets of Plant Funds 59
8 Land and Buildings 62
9 Equipment 70
10 Designated Current Funds—Sponsored Research 72
10A " " " Investment Income 82
10B " " " Miscellaneous 90
10C " " " Agency 94
11 Changes in Principal of Loan Funds 95
12 Changes in Principal of Endowment Funds 96
13 Changes in Principal of Plant Funds 104

APPENDIX

Gifts and Grants 106
Description of Loan Funds 110
Description of Endowment Funds 111
Description of Plant Funds 126

LETTER OF TRANSMITTAL

December 17, 1958

To the President and the Board of Trustees
The George Washington University
Washington, D. C.

Gentlemen:

I am submitting herewith the Report of the Treasurer of The George Washington University for the fiscal year ended August 31, 1958. This report is a review of the budget operations for the year and is based on the budget approved by the Board of Trustees of the University.

The accounts of the University are kept and its financial reports arranged as far as practicable in conformity with the recommendations of the National Committee on Standard Reports for Institutions of Higher Education. Under that plan the funds of the University are classified in various fund groups, and the accounts and financial statements segregate clearly the assets and liabilities of each of these groups as indicated in the balance sheet, Exhibit A.

Price Waterhouse & Co. have examined the accounts of the University for the past year, and their report is submitted herewith.

A condensed summary of the principal facts in the report is presented below and on succeeding pages, followed by detailed Exhibits and Schedules.

Respectfully submitted,
Henry W. Herzog
Treasurer

CURRENT FUNDS

These Funds represent assets which are available for immediate use in the current operation of the University.

Current Income for the Year (Exhibit B and Schedule 1)	14,595,088.75
Current Expense for the Year (Exhibit B and Schedule 2)	14,256,390.90
Excess of Current Income over Current Expense (Exhibit B)	338,697.85

The latter amount was added to Current Funds Surplus. Surplus at the end of the year amounted to $1,275,764.77 (Exhibit C). During the year there was transferred from Surplus to Net Investment in Plant $344,678.28 for the purchase of land and buildings, equipment, and for the reduction of trust notes payable.

Prepaid Expense of $345,403.85 includes $177,891.02 at the University and $167,512.83 at the Hospital. Of the total prepaid expense, $286,010.00 was represented by inventories.

Included in the Accounts Receivable of $663,831.41 due from the United States Government resulting from cost reimbursable research contracts is $231,163.00 of overhead expense allocated to certain contracts with the Department of the Army. The allocation of these expenses was made by the University consistent with policies followed in the preceding several years, on a basis negotiated with and acceptable to the Navy and the Air Force. However, the Army has not as yet adjudicated this matter. Hospital Accounts Receivable of $482,972.85 include $325,253.79 from patients hospitalized on or immediately prior to August 31, 1958, and from contracts with insurance and other agencies. The remainder of $157,719.06 represents past due accounts net of a reserve of $100,000 provided to cover possible collection losses.

Research grants, investment income, gifts, and agency funds comprise designated funds which consist of current expendable assets, limited as to disposition (Exhibit D and Schedules 10, 10A, 10B, 10C).

During this year designated gifts and grants for use as specified amounted to $4,159,672.49. Unexpended funds totaled $1,290,131.17 (Exhibit D).

LOAN FUNDS

For the assistance of students seeking financial aid, loan funds have been established by the University and other organizations (Schedule 4). Loans are made at a low rate of interest and when repaid the interest is added to the principal of the funds.

During the year, 497 loans were made to students. Loan funds totaled $66,576.34.

ENDOWMENT FUNDS

The principal of endowment funds amounted to $7,078,397.93 (Exhibit F), an increase of $121,277.16. This increase is accounted for in large part by a bequest of Homer S. Cummings in the amount of $81,384.63, the income to be used for the Law School. The endowment funds are represented by assets which, under the terms of wills, deeds of gift, or under the by-laws of the University, must be held in perpetual trust for income-producing purposes. The principal amount and changes during the year are recorded in Schedule 12.

"Consolidated Endowment Funds" consisted of 140 endowments with a total value of $5,642,502.92 (Schedule 5). The assets of these funds are combined to eliminate the possibility of partial or total loss of any fund through the failure of a specific investment, and to avoid temporary suspension of income and the carrying of uninvested small cash balances, and to give equality of treatment to all funds. Unless otherwise restricted by the donors, the assets of all new endowments are added to the assets of the Consolidated Endowment Funds.

Reserves for Protection of Investments were as follows: Consolidated Endowment Funds, $102,443.70; Scottish Rite Fund, $62,736.30 (Schedule 12).

Earnings of Consolidated Endowment Funds are recorded in one income account and at the end of the year are distributed to the individual funds using the market value basis of distribution. The average rate of return on the investments of these funds amounted to 4.576% during the past year; however, income was actually distributed on the basis of units assigned to each fund.

The Scottish Rite Endowment Fund earned 5.667% net income on its investments during the year just ended.

Net income from all investments for the year was $353,546.13 (Schedule 10A—Page 4).

Pledges to the School of Medicine Endowment Fund on August 31, 1958, totaled $263,612.00.

PLANT FUNDS—UNEXPENDED

Cash and other assets for development of the physical plant comprise these funds (Schedule 7). At the end of the year the balance was $513,650.08 (Exhibit G).

REPORT OF INDEPENDENT AUDITORS

December 17, 1958

To the President and the Board of Trustees
The George Washington University
Washington, D. C.

We have examined the accompanying balance sheet of The George Washington University as at August 31, 1958, and the summary of current income and expense, the related notes, summary of current funds surplus and summaries of other funds (Exhibits A through H) for the year then ended.

Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary. Receivables from the United States Government were not confirmed by direct correspondence; however, except for the amount of $231,000 mentioned below, we satisfied ourselves with respect to such receivables by means of other auditing procedures.

Certain costs incurred by the University which were allocated to research projects undertaken on behalf of United States military departments have been disallowed by representatives of the United States Government. The University has appealed the cost disallowances to the Armed Services Board of Contract Appeals. Pending a decision on the appeal, the collectibility of $231,000 of a total of $663,831 included in the University's August 31, 1958, balance sheet as receivable from the Government and the final disposition of $239,000 collected from the Government as at that date cannot be determined.

In our opinion, subject to the comments in the preceding paragraph, the accompanying financial statements (Exhibits A through H) and related notes present fairly the financial position of The George Washington University as at August 31, 1958, and the results of its operations for the year then ended, in conformity with generally accepted principles of accounting applied on a basis consistent with that of the preceding year.

PRICE WATERHOUSE & CO.

THE GEORGE WASHINGTON UNIVERSITY

BALANCE SHEET

August 31, 1958

ASSETS

CURRENT FUNDS			
Cash		720,881.58	
Investments (Note 2) (Schedule 3) (Market Value $438,611.00)		445,763.50	
Accrued Interest		34,707.00	
Note Receivable (Schedule 3)		72,882.44	
Accounts Receivable—U. S. Government—Cost Reimbursable Research Contracts	663,831.41		
" Hospital, net of allowance of $100,000 for doubtful accounts	482,972.85		
" Other	82,624.31	1,229,428.57	
Prepaid Expense—Inventories	286,010.00		
" Other	59,393.85	345,403.85	
Due from Plant Funds (Note 6)		400,845.73	3,249,912.67
LOAN FUNDS			
Cash		36,885.65	
Loans Receivable (Schedule 4)		29,690.69	66,576.34
ENDOWMENT FUNDS			
Cash	24,580.84		
Investments (Note 2) (Schedule 5)			
Stocks and Bonds (market value $7,598,167.00)	6,458,184.99		
Real Estate	192,110.00		
Other Investments	30,363.39	6,705,239.22	
Funds Held in Trust by Others (Schedule 6)		373,158.71	7,078,397.93
PLANT FUNDS—UNEXPENDED			
Cash		108,771.40	
Investments (Note 2) (Schedule 7) (market value $400,569.00)		404,878.68	513,650.08
INVESTED IN PLANT			
Land and Buildings (Note 3) (Schedule 8)		20,793,220.13	
Equipment (Note 3) (Schedule 9)		2,736,281.22	23,529,501.35
TOTAL			34,438,038.37

LIABILITIES, FUNDS, SURPLUS

CURRENT FUNDS			
Liabilities—Note Payable, 3½%, due October 29, 1958	*300,000.00*		
" Accounts Payable	*355,533.54*		
" Deferred Income	*28,483.19*	684,016.73	
Designated Funds (Note 1) (Exhibit D)—Sponsored Research	605,880.36		
" Investment Income	102,953.50		
" Miscellaneous	577,538.84		
" Agency	3,758.47	1,290,131.17	
Surplus (Exhibit C)		1,275,764.77	3,249,912.67
LOAN FUNDS—Balances (Exhibit E)			66,576.34
ENDOWMENT FUNDS—Balances (Exhibit F)			7,078,397.93
PLANT FUNDS—Unexpended Balances (Note 4) (Exhibit G)			513,650.08
INVESTED IN PLANT			
Note Payable, 3¼%, due November 24, 1958 (Note 6)	385,000.00		
" 3½%, due July 24, 1959 (Note 6)	450,000.00		
Trust Notes Payable (Note 5)	864,617.30	1,699,617.30	
Due to Current Funds		400,845.73	
Net Investment in Plant (Exhibit H)		21,429,038.32	23,529,501.35
TOTAL			34,438,038.37

Exhibit A

SUMMARY OF CURRENT INCOME AND EXPENSE

For the Year Ended August 31, 1958

Income (Schedule 1)			
Educational and General			
Student Fees	4,054,725.08		
Endowment and Plant Funds Income—portion used	303,221.06		
Gifts—portion used	317,323.84		
Student Activities	96,571.66		
Miscellaneous	193,221.22		
Sponsored Research—grants used and reimbursements under special contracts	3,935,476.46		
Hospital	5,093,252.14	13,993,791.46	
Auxiliary Enterprises		601,297.29	14,595,088.75
Expense (Schedule 2)			
Educational and General			
Administration and General	1,298,739.67		
Instruction and Departmental Research	2,894,290.56		
Libraries	177,259.24		
Maintenance and Operation of Plant	688,459.99		
Student Activities	201,552.04		
Sponsored Research	3,935,476.46		
Hospital	4,932,750.96		
	14,128,528.92		
Less overhead allocated to Sponsored Research and Hospital	669,961.78	13,458,567.14	
Auxiliary Enterprises		618,007.56	
Student Aid		179,816.20	14,256,390.90
Excess of Current Income Over Current Expense—Exhibit C			338,697.85

SUMMARY OF CURRENT FUNDS SURPLUS

For the Year Ended August 31, 1958

	Total	Unappropriated	Appropriated for Hospital
Balance August 31, 1957	1,091,744.20	184,396.17	907,348.03
Additions or (Deductions)			
Excess of Current Income over Current Expense (Exhibit B)	338,697.85	178,196.67	160,501.18
Hospital Depreciation included in Current Expense for which there was no outlay of Current Funds (Schedule 2)	190,000.00	....	190,000.00
Transfer to Net Investment in Plant equal to cost of non-departmental capital additions from Current Funds—Exhibit H	(−344,678.28)	(−192,218.02)	(−152,460.26)
Bequest of Susan Whitney Dimock—Appendix—Page 1	1.00	1.00	
Balance August 31, 1958—Exhibit A	1,275,764.77	170,375.82	1,105,388.95

Exhibit C

THE GEORGE WASHINGTON UNIVERSITY

NOTES TO FINANCIAL STATEMENTS

August 31, 1958

Note 1

The University held designated funds aggregating $1,290,131.17 at August 31, 1958, which are to be used for specific purposes. Of this total $367,091.84 was received from the United States Government for use in various research projects, principally by the School of Medicine, while the balance was received, for the most part, from charitable institutions and foundations for research and other uses of the University's schools and departments and to finance student aid.

Note 2

Investments are stated at cost or the fair market value at the date of acquisition except real estate which is stated at cost less depreciation of building.

Note 3

Land and buildings acquired before 1921 are stated at appraised values determined by the Washington Real Estate Board June 18, 1921, except for the Medical School property which is stated at an appraised value determined by the Board of Trustees, August 31, 1935. Land and buildings acquired after June 18, 1921, are stated at cost or at appraised values at dates of gifts. In 1949 the Buildings and Lands Committee of the Board of Trustees appraised the Hospital Building at $6,000,000.00 and the land at $1,389,564.00.

Equipment acquired prior to August 31, 1938, is stated at cost less accumulated depreciation to that date. Equipment acquired after August 31, 1938, is stated at cost, with the exception of Hospital and Cancer Clinic equipment which is stated at cost less accumulated depreciation.

NOTE 4

Unexpended plant funds at August 31, 1958, are designated for the following uses:

Hospital Building	*239,718.36*	
Law Center Building	*145,826.85*	
Athletic facilities	*75,645.08*	
Other	*52,459.79*	513,650.08

NOTE 5

The trust notes payable in the Plant Funds were as follows:

Equitable Life Assurance Society	
Secured by Nurses Home. Due $2,958 each February 1, May 1, August 1, and November 1, including interest at 5%	139,868.61
Perpetual Building Association	
Secured by 2001 H Street, NW. Due $675 per month including interest at 5%	74,748.69
Riggs National Bank	
Secured by School of Medicine Buildings. Due February 21, 1960. Interest 4%	350,000.00
Secured by Corcoran Hall and Stockton Hall. Due October 30, 1960. Interest 5%	300,000.00
	864,617.30

NOTE 6

The University has entered into an agreement with the Housing and Home Finance Agency of the United States Government to sell to the Government, at face value, up to $1,250,000 of the University's secured 2⅞% bonds which are to mature serially during the period 1960 through 1997. In effect, the agreement provides for refinancing the indebtedness incurred by the University in purchasing two buildings, Adams Hall and Madison Hall, and in remodeling them for use as student residence halls. At August 31, 1958, the indebtedness to be refinanced consisted of $835,000 of 3½% notes payable and of a $400,845.73 inter-fund obligation.

SUMMARY OF DESIGNATED FUNDS

For the Year Ended August 31, 1958

	Total	Sponsored Research (Schedule 10)	Investment Income (Schedule 10A)	Miscellaneous (Schedule 10B)	Agency (Schedule 10C)
BALANCE AUGUST 31, 1957	1,398,786.04	674,886.70	103,868.66	610,292.84	9,737.84
ADDITIONS					
Gifts and Grants		3,866,470.12		292,702.37	
Investment income			311,221.34	16,088.85	
Deposits				1,012.28	48,667.98
	4,536,162.94	3,866,470.12	311,221.34	309,803.50	48,667.98
DEDUCTIONS					
Research expenditures		3,935,476.46			
Scholarships, fellowships			11,321.00	37,900.67	
Prizes			2,233.94	532.25	
Transferred to					
Net Investment in Plant—Exhibit H			232.35		
Current Income—Schedule 1					
Educational and General			260,896.27	295,776.67	
Hospital			9,169.23	10.00	
Sponsored Research—Schedule 10			4,336.05		
Designated Miscellaneous Funds—Schedule 10B			16,088.85		
Endowment Funds—Schedule 12			3,962.68	135.00	
Plant Funds—Schedule 13			3,896.13	7,665.16	
Withdrawals				537.75	54,647.35
	4,644,817.81	3,935,476.46	312,136.50	342,557.50	54,647.35
BALANCE AUGUST 31, 1958—EXHIBIT A	1,290,131.17	605,880.36	102,953.50	577,538.84	3,758.47

SUMMARY OF LOAN FUNDS PRINCIPAL

For the Year Ended August 31, 1958

Balance August 31, 1957		61,296.92
Additions (Schedule 11)		
Gifts	8,970.99	
Interest on loans	928.80	9,899.79
		71,196.71
Deductions (Schedule 11)		
Transferred to U. S. Government		4,620.37
Balance August 31, 1958 Exhibit A		66,576.34

Exhibit E

SUMMARY OF ENDOWMENT FUNDS PRINCIPAL

For the Year Ended August 31, 1958

Balance August 31, 1957		6,957,120.77
Additions (Schedule 12)		
Gifts	135,224.90	
Investment income	3,962.68	
Net gains on sale of investments	11,003.19	
Transferred from Plant Funds—Schedule 13	237.42	150,428.19
		7,107,548.96
Deductions (Schedule 12)		
Temporary fund discontinued		29,151.03
Balance August 31, 1958—Exhibit A		7,078,397.93

SUMMARY OF PLANT FUNDS PRINCIPAL

For the Year Ended August 31, 1958

Balance August 31, 1957			489,403.90
Additions (Schedule 13)			
Gifts		58,641.23	
Investment income		12,395.44	
Gain on sale of investments		21.60	71,058.27
			560,462.17
Deductions (Schedule 13)			
Invested in Plant—Exhibit H			
Land and Buildings	31,445.27		
Equipment	13,103.80	44,549.07	
Transferred to Current Income—Schedule 1		2,025.60	
Transferred to Endowment Funds—Schedule 12		237.42	46,812.09
Balance August 31, 1958—Exhibit A			513,650.08

Exhibit G

SUMMARY OF NET INVESTMENT IN PLANT

For the Year Ended August 31, 1958

	Current Funds		Designated Funds (Exhibit D)	Plant Funds (Exhibit G)	Land and Buildings (Schedule 8)	Total
	Departments (Schedule 2)	Surplus (Exhibit C)				
Balance August 31, 1957						21,052,400.21
Additions						
University						
Land and Buildings	....	(−373,805.00)	....	31,445.27	1.00	
Equipment	177,177.41	142,085.58	232.35	2,473.07	....	
Trust Notes Curtailed	....	423,937.44	....	....	....	
	177,177.41	192,218.02	232.35	33,918.34	1.00	
Hospital						
Land and Buildings	....	42,468.94	....			
Equipment	....	109,991.32	....	10,630.73		
		152,460.26		10,630.73		
Total Additions	177,177.41	344,678.28	232.35	44,549.07		
Deductions						
Depreciation of Hospital Building and Equipment	....	190,000.00				
		190,000.00				
Total Net Additions	177,177.41	154,678.28	232.35	44,549.07	1.00	376,638.11
Balance August 31, 1958—Exhibit A						21,429,038.32

SCHEDULES

CURRENT INCOME

For the Year Ended August 31, 1958

EDUCATIONAL AND GENERAL

Student Fees			
Tuition and Laboratory			
Columbian	346,257.21		
Education	149,814.30		
Engineering	373,351.44		
General Studies	302,451.19		
Institute of Correctional Administration	11,400.00		
Government	164,136.82		
Air Force Advanced Management	66,491.79		
Air Force Resources Management	36,800.00		
European Productivity Agency	16,800.00		
French Labor Program	24,000.00		
International Cooperation Administration	960.00		
Navy Comptrollership	41,789.72		
Graduate Council	35,539.62		
Junior	752,090.04		
Law	408,555.54		
Medicine	366,971.00		
Pharmacy	19,064.00		
Special Students	150,581.53		
University Students	292,896.01	3,559,950.21	
Summer Sessions		345,379.75	
Unallocated—Old Fees		1,727.65	3,907,057.61

Miscellaneous Fees			
Application	52,794.00		
Art Validation	112.50		
Binding Theses	960.00		
Breakage	496.35		
Change	3,174.00		
Engineers Council	3,433.50		
Graduation	38,950.00		
Graduate Record Examinations	2,845.00		
Late	1,930.00		
Library Fines	3,154.75		
Personnel Office Credential Service	76.50		
Publication of Theses	2,805.00		
Reinstatement	2,625.00		
Service	5,638.00		
Special Examinations	385.00		
Student Bar Association	6,269.23		
Testing Center	16,815.55		
Transcripts	5,203.09	147,667.47	4,054,725.08

CURRENT INCOME (Continued)

For the Year Ended August 31, 1958

EDUCATIONAL AND GENERAL (Continued)			
Investment Income			
Endowment Funds—Unrestricted	42,324.79		
" " Restricted	257,561.94	299,886.73	
Plant Funds—Restricted		3,334.33	303,221.06
Gifts			
Unrestricted (Appendix—Page 1)		33,369.73	
Restricted (Schedule 10B—portion used)		283,954.11	317,323.84
Student Activities			
Athletics		67,072.51	
Campus Combo		330.36	
Cherry Tree		10,058.31	
Colonial Boosters		543.25	
Dramatics		1,951.04	
Engineers Council		656.44	
Hatchet		7,794.73	
Homecoming		4,371.12	
Student Bar Association		35.60	
Student Council Activities		3,558.28	
Student Council Reserve		200.02	96,571.66

Miscellaneous		
Handling Fee—Veterans Administration	15,394.42	
Interest Earned	7,253.59	
Law Review	8,418.15	
Mecheleciv	2,843.65	
Miscellaneous	10,773.90	
Parking Lot—Hospital	29,107.57	
" " Students	23,426.80	
Reading Clinic	35,540.50	
Rent on Miscellaneous Properties—Net	53,908.04	
Speech Clinic	4,529.00	
Transfer from Law Center Fund (Schedule 13) for campaign expense	2,025.60	193,221.22
Sponsored Research (Schedule 10—portion used)		3,935,476.46

CURRENT INCOME (Continued)

For the Year Ended August 31, 1958

EDUCATIONAL AND GENERAL (Continued)

Hospital—Patients

Room Charges		
Private	616,484.00	
Semi-Private	1,491,849.93	
Wards	308,241.00	
Nurseries	154,119.00	2,570,693.93
Special Service Departments		
Operating Room	296,960.70	
Delivery Room	128,772.75	
Anesthesiology	370,398.00	
Oxygen Therapy	57,204.61	
X-Ray	274,187.55	
Physical Therapy	85,104.70	
Laboratories	541,999.35	
Pharmacy	327,917.49	
Cardiology	38,231.04	
Electroencephalography	9,900.50	
Post Anesthesia Room	24,824.00	
Radiation Therapy	20,612.25	2,176,112.94

Cancer Clinic				
General Services				
Gifts	*99,838.84*			
Investment Income (Schedule 10A)	*9,087.05*			
Miscellaneous	*23.00*			
	322.20	109,271.09		
Out-Patient Departments				
Clinics				
Emergency	86,859.62			
Ophthalmology	38,936.65			
Surgery	22.50			
Dental	5,723.56			
Gynecology—Obstetrics	2.00			
	2,390.50	133,934.83		
Other Income				
Medical and Surgical Supplies				
Special Duty Nurses	171,385.63			
Telephone	5,163.00			
	18,500.25	195,048.88	5,185,061.67	(Continued)

CURRENT INCOME (Continued)

For the Year Ended August 31, 1958

EDUCATIONAL AND GENERAL (Continued)			
Hospital—Patients (Continued)		5,185,061.67	
Less Allowances			
Group Hospitalization	84,936.80		
Hospital Service Agency	10,847.68		
D. C. Health Department	20,611.32		
Discounts	11,354.28		
Free Work	134,874.81		
Other	3,946.10	266,570.99	
Total—Hospital Patients		4,918,490.68	
Hospital—Other Income			
Cafeteria	126,418.18		
Endowment Income (Schedule 10A)	9,146.23		
Gifts	12,965.18		
Bad Debt Recovery	16,640.50		
Laundry	2,479.62		
Medical Abstracts	1,267.45		
Parking Rent	1,000.00		
Public Telephone Commissions	463.65		
Miscellaneous	4,380.65	174,761.46	5,093,252.14

AUXILIARY ENTERPRISES			
Residence Halls			
Adams Hall	19,702.00		
Interns and Residents Hall	6,000.00		
Madison Hall	22,456.43		
Nurses Home	36,819.99		
Strong Hall	32,235.95		
Welling Hall	3,512.00	120,726.37	
Sorority Halls			
2112 G Street, NW	1,350.00		
2129 G Street, NW	4,836.06		
2131 G Street, NW	780.00		
802 21st Street, NW	630.00	7,596.06	
Miscellaneous			
Book Store—University	380,481.58		
" " Medical School	56,826.89		
Cafeteria Commissions	7,459.36		
Duplicating Bureau	2,545.82		
Lisner Auditorium	23,444.25		
Student Union	2,216.96	472,974.86	601,297.29
TOTAL—EXHIBIT B			14,595,088.75

CURRENT EXPENSE

For the Year Ended August 31, 1958

EDUCATIONAL AND GENERAL	Total	Salaries	Other Expense	Equipment Exhibit H
Administration and General				
President's Office	135,175.42	67,014.64	68,160.78	
Administrative Secretary's Office	74,348.09	70,155.24	4,192.85	
Dean of Faculties' Office	39,723.01	37,539.84	2,183.17	
Treasurer's Office	347,585.55	253,319.43	94,266.12	
Admissions Office	75,049.08	69,513.39	5,535.69	
Registrar's Office	71,061.94	58,095.36	12,966.58	
Activities for Men	6,505.43	6,018.00	487.43	
Activities for Women	16,026.42	15,172.86	853.56	
Adviser to Students from Foreign Countries	1,502.24	734.48	767.76	
University Chapels	4,629.28	3,025.00	1,604.28	
Veterans Education	14,051.12	13,582.14	468.98	
Staff Benefits	235,129.97	21,147.60	213,982.37	
Assistant to the President	44,490.16	35,031.18	9,458.98	
Alumni Relations Office	45,230.08	18,308.42	26,921.66	
Educational Counseling Office	20,383.21	14,092.19	6,291.02	
Fund Raising	7,485.75	5,679.27	1,806.48	
Public Relations Office	51,570.42	34,732.52	16,837.90	
Convocations	22,653.81	702.08	21,951.73	
Scientific Activities	12,452.25	11,204.54	897.71	350.00
Financial Expense	26,067.43	....	26,067.43	
General Insurance	10,032.42	....	10,032.42	
Legal Expense	10,672.16	....	10,672.16	
Curator of Art	1,402.62	....	1,402.62	
Health Administration	23,486.31	17,280.00	6,206.31	
Campaign Expense	2,025.50	....	2,025.50	
	1,298,739.67	752,348.18	546,041.49	350.00
Instruction and Departmental Research				

Columbian College				
Administration	*6,271.54*	*5,509.08*	*762.46*	
Art	*23,663.70*	*13,128.75*	*9,935.20*	*599.75*
Biology	*20,046.13*	*19,319.96*	*522.17*	204.00
Botany	*13,885.17*	*12,075.00*	*340.17*	1,470.00
Chemistry	103,997.51	96,059.90	7,485.97	451.64
Classical Languages and Literature	4,203.28	4,200.00	3.28	
Economics	59,339.85	59,189.36	150.49	
English	124,473.69	124,154.84	318.85	
Geography	19,450.17	18,358.96	548.79	542.42
Geology	11,085.70	8,880.00	573.20	1,632.50
Germanic Languages	19,352.43	19,300.00	52.43	
History	65,584.87	65,392.96	191.91	
Journalism	16,558.01	16,510.00	48.01	
Mathematics	46,009.86	45,960.00	49.86	
Philosophy	11,378.87	11,350.00	28.87	
Physics	60,501.49	58,967.35	1,156.02	378.12
Political Science	44,256.24	44,129.92	126.32	
Psychology	55,702.23	54,952.17	545.22	204.84
Religion	17,954.70	17,879.88	74.82	
Romance Languages	66,479.50	66,260.00	219.50	
Language Workshop	1,224.03	....	655.03	569.00
Secretarial Studies	8,129.46	7,250.00	204.46	675.00
Slavic Languages	6,194.33	6,170.00	24.33	
Sociology	18,260.25	18,219.96	40.29	
Speech	42,055.67	39,973.26	1,267.30	815.11
Zoology	24,995.12	21,830.00	2,721.92	443.20
	891,053.80	855,021.35	28,046.87	7,985.58

CURRENT EXPENSE (Continued)

For the Year Ended August 31, 1958

	Total	Salaries	Other Expense	Equipment Exhibit H
EDUCATIONAL AND GENERAL				
Instruction and Departmental Research (Continued)				
Education				
Administration	10,139.14	9,109.32	1,029.82	
Education	66,960.99	65,860.32	713.72	386.95
Home Economics	14,053.31	12,600.00	1,103.31	350.00
	91,153.44	87,569.64	2,846.85	736.95
Engineering				
Administration	35,828.49	30,932.30	4,896.19	
Civil	59,019.02	55,688.63	1,137.16	2,193.23
Electrical	55,544.64	46,850.00	4,848.30	3,846.34
Mechanical	46,481.84	38,265.00	785.82	7,431.02
Engineering Administration	47,692.34	45,810.00	1,794.06	88.28
Engineers Council	2,796.65	....	2,796.65	
Mecheleciv	4,136.94	....	4,136.94	
Moving to Tompkins Hall	9,506.16	600.00	2,365.00	6,541.16
	261,006.08	218,145.93	22,760.12	20,100.03
General Studies				
Administration	80,139.56	67,939.27	12,200.29	
Instruction	127,236.10	126,180.10	1,056.00	
Reading Clinic	20,840.60	19,637.65	705.48	497.47
Institute of Correctional Administration	8,144.40	6,672.88	1,471.52	
	236,360.66	220,429.90	15,433.29	497.47

Administration	*9,733.72*	*9,028.30*	*705.42*	
Accounting	*27,624.18*	*27,445.00*	*179.18*	
Business Administration	*52,025.16*	*51,703.86*	*321.30*	
Public Administration	*20,444.91*	*20,444.91*		
Statistics	*27,894.45*	*26,715.00*	391.20	788.25
Navy Comptrollership	20,402.16	17,731.07	2,322.51	348.58
Air Force Resources Management	22,369.53	19,877.83	2,491.70	
Air Force Advanced Management	30,553.58	25,064.95	5,063.37	425.26
International Cooperation Administration	640.00	640.00		
School of Government Study	1,446.86	699.25	747.61	
Israeli Labor Productivity	1,996.80	1,910.00	86.80	
French Labor	12,814.41	11,385.00	1,429.41	
European Productivity	10,092.86	5,917.00	3,818.56	357.30
	238,038.62	218,562.17	17,557.06	1,919.39
Graduate Council				
Administration	7,852.94	5,345.11	2,507.83	
Instruction	4,137.49	2,000.00	2,137.49	
	11,990.43	7,345.11	4,645.32	
Junior—Administration	6,804.24	6,093.21	711.03	
Law				
Administration	25,861.18	19,580.12	6,281.06	
Instruction	154,888.25	151,098.00	3,790.25	
Law Review	13,692.22	2,547.96	11,144.26	
Patent, Trademark and Copyright Foundation	86,596.87	64,312.94	22,283.93	
Student Bar Association	3,516.83	....	3,516.83	
	284,555.35	237,539.02	47,016.33	

CURRENT EXPENSE (Continued)

For the Year Ended August 31, 1958

	Total	Salaries	Other Expense	Equipment Exhibit H
EDUCATIONAL AND GENERAL (Continued)				
Instruction and Departmental Research (Continued)				
Medicine				
Administration	60,850.95	56,148.30	4,702.65	
Anatomy	53,909.78	48,266.36	2,207.77	3,435.65
Anesthesiology	499.98	499.98		
Bacteriology, Hygiene and Preventive Medicine	66,608.12	57,680.36	2,961.29	5,966.47
Biochemistry	47,893.96	42,919.64	2,975.24	1,999.08
Dermatology, Syphilology	1,525.00	1,525.00		
Medicine	63,296.52	62,216.24	723.45	356.83
Neurology, Neurological Surgery	10,376.31	9,799.92	345.99	230.40
Obstetrics, Gynecology	24,074.35	23,903.24	171.11	
Ophthalmology	1,617.94	1,325.00	292.94	
Otolaryngology	1,545.00	1,450.00	95.00	
Pathology	32,112.42	30,689.48	967.63	455.31
Pediatrics	20,544.61	20,046.58	498.03	
Pharmacology	32,850.97	30,953.08	1,076.84	821.05
Physical Medicine and Rehabilitation	3,177.93	2,891.63	138.30	148.00
Physiology	98,108.89	66,004.44	4,675.36	27,429.09
Psychiatry	12,417.34	12,390.34	27.00	
Surgery	43,313.10	38,319.84	4,993.26	
Urology	1,593.37	1,475.00	118.37	
Research—General	12,471.69	5,901.04	6,570.65	
Teaching Aids	6,167.77	5,599.92	214.50	353.35
Lecturers and Exchange Professors	620.00	620.00		
	595,576.00	520,625.39	33,755.38	41,195.23

Pharmacy—Administration	*3,071.12*	*2,400.00*	*671.12*	
" Instruction	*37,175.16*	*35,353.18*	*1,251.92*	*570.06*
	40,246.28	*37,753.18*	*1,923.04*	*570.06*
Special—Administration	6,493.48	6,299.88	193.60	
University—Administration	5,972.28	5,333.28	639.00	
Summer Sessions—Administration	9,384.72	4,999.92	4,384.80	
" " Instruction	128,193.49	124,314.32	3,879.17	
	137,578.21	129,314.24	8,263.97	
Physical Education—Men	40,272.20	32,443.27	7,828.93	
" " Women	43,410.52	38,447.11	4,963.41	
	83,682.72	70,890.38	12,792.34	
Air Science—R. O. T. C.	3,778.97	5,099.20	(−1,320.23)	
TOTAL INSTRUCTION AND DEPARTMENTAL RESEARCH	2,894,290.56	2,626,021.88	195,263.97	73,004.71

CURRENT EXPENSE (Continued)

For the Year Ended August 31, 1958

	Total	Salaries	Other Expense	Equipment Exhibit H
EDUCATIONAL AND GENERAL (Continued)				
Libraries—Books	54,117.40	....	....	54,117.40
" Other	123,141.84	105,179.61	17,241.23	721.00
	177,259.24	105,179.61	17,241.23	54,838.40
Maintenance and Operation of Plant	688,459.99	338,726.40	308,174.20	41,559.39
Student Activities				
Men's Athletics	141,682.51	59,776.41	81,906.10	
Dramatics	8,730.34	4,703.09	4,027.25	
Recreation Program	2,590.59	1,017.67	1,572.92	
Student Activities Office	4,461.86	2,896.67	1,565.19	
University Accounts	5,406.95	2,749.92	2,657.03	
Student Council Accounts	37,677.19	....	37,677.19	
Homecoming	1,002.60	....	1,002.60	
	201,552.04	71,143.76	130,408.28	
Sponsored Research (Schedule 10)	3,935,476.46	2,448,838.64	1,486,637.82	

Hospital			
Administration	*446,391.43*	*207,984.54*	*238,406.89*
Dietary	587,237.99	278,909.34	308,328.65
Household and Property			
Laundry	80,028.55	77,160.53	2,868.02
Linen Service	57,080.34	15,004.84	42,075.50
Housekeeping	227,344.36	177,840.11	49,504.25
Plant	302,090.47	80,268.96	221,821.51
	666,543.72	350,274.44	316,269.28
Professional Care—General			
Medical and Surgical	123,749.49	91,217.54	32,531.95
Nursing Care	1,082,049.87	1,037,979.30	44,070.57
Central Sterile Supply	97,727.06	33,805.44	63,921.62
Glove Room	18,090.91	6,205.12	11,885.79
	1,321,617.33	1,169,207.40	152,409.93

CURRENT EXPENSE (Continued)

For the Year Ended August 31, 1958

	Total	Salaries	Other Expense	Equipment Exhibit H
EDUCATIONAL AND GENERAL (Continued)				
Hospital (Continued)				
Professional Care—Special				
Post Anesthesia Room	19,378.50	19,378.50		
Operating Rooms	206,665.99	136,554.57	70,111.42	
Delivery Rooms	104,274.45	92,141.89	12,132.56	
Anesthesiology	188,697.52	134,849.46	53,848.06	
Inhalation Therapy	24,847.93	12,347.02	12,500.91	
Cardiology—Heart Station	20,603.70	17,319.33	3,284.37	
Electroencephalography	6,794.29	6,112.14	682.15	
Laboratories	211,169.97	182,303.25	28,866.72	
Pharmacy	151,355.95	28,840.70	122,515.25	
Physical Medicine	57,783.25	51,529.97	6,253.28	
Radioisotope Laboratory	4,794.62	2,213.44	2,581.18	
X-Ray	171,801.08	116,960.46	54,840.62	
Medical Records	61,885.57	56,997.60	4,887.97	
Medical Library for Residents and Interns	3,393.05	1,376.14	2,016.91	
	1,233,445.87	858,924.47	374,521.40	
Out-Patient Department				
Administration	60,838.46	35,686.69	25,151.77	
Nursing Care	43,469.34	43,469.34		
Emergency Room	23,029.98	15,840.92	7,189.06	
	127,337.78	94,996.95	32,340.83	

Cancer Clinic			
Administration	*40,824.10*	*29,069.65*	*11,754.45*
Medical and Surgical	*53,173.83*	*25,150.31*	*28,023.52*
Laundry	*497.57*	....	*497.57*
Housekeeping	*5,819.15*	*4,716.74*	*1,102.41*
Plant	*12,893.02*	*3,737.35*	*9,155.67*
Overhead Credit—Research	(−17,374.81)	....	(−17,374.81)
	95,832.86	62,674.05	33,158.81
Respiratory and Rehabilitation Center			
Administration	7,093.09	4,082.50	3,010.59
Nursing Care	5,530.07	5,229.62	300.45
	12,623.16	9,312.12	3,311.04
Miscellaneous			
Ambulance Service	350.00	....	350.00
Scholarships	5,328.99	....	5,328.99
Residents and Interns Room Charges	4,477.05	....	4,477.05
Nurses Home	15,000.00	....	15,000.00
Allowance for Doubtful Accounts	104,076.31	....	104,076.31
Transfer to University for Support of School of Medicine	122,488.47	....	122,488.47
Depreciation—Building	60,000.00	....	60,000.00
" Equipment	130,000.00	....	130,000.00
	441,720.82	....	441,720.82
Total Hospital	4,932,750.96	3,032,283.31	1,900,467.65

CURRENT EXPENSE (Continued)

For the Year Ended August 31, 1958

	Total	Salaries	Other Expense	Equipment Exhibit H
AUXILIARY ENTERPRISES				
Residence Halls				
Adams Hall	18,473.15	10,845.34	7,627.81	
Interns and Residents Hall	1,191.56	....	1,191.56	
Madison Hall	32,914.84	18,228.76	14,686.08	
Nurses Home	3,661.41	....	3,661.41	
Strong Hall	44,583.58	13,831.53	30,752.05	
Welling Hall	31,446.53	5,460.57	25,985.96	
	132,271.07	48,366.20	83,904.87	
Sorority Halls				
2112 G Street, NW	901.08	....	901.08	
2129 G Street, NW	2,858.94	....	2,858.94	
2131 G Street, NW	627.56	200.00	427.56	
802 21st Street, NW	452.37	....	452.37	
	4,839.95	200.00	4,639.95	
Services				
Book Store—University	347,866.72	41,229.13	306,471.73	165.86
" " Medical School	55,637.84	6,140.99	49,432.77	64.08
Duplicating Bureau	20,285.62	5,612.63	7,718.12	6,954.87
Lisner Auditorium	25,403.55	13,531.95	11,871.60	
Student Union	31,702.81	16,462.24	15,000.47	240.10
	480,896.54	82,976.94	390,494.69	7,424.91
Total Auxiliary Enterprises	618,007.56	131,543.14	479,039.51	7,424.91

STUDENT AID				
Scholarships	67,732.40	2,400.00	65,332.40	
Grants-in-aid	112,083.80	....	112,083.80	
	179,816.20	2,400.00	177,416.20	
TOTAL EXPENSE	14,926,352.68	9,508,484.92	5,240,690.35	177,177.41
Less overhead allocated to Sponsored Research and Hospital	669,961.78			
TOTAL EXPENSE, ADJUSTED	14,256,390.90			

INVESTMENTS OF CURRENT FUNDS

August 31, 1958

	Description	%	Due	Par	Value	
					Market	Book
Bonds						
Federal Land Banks	Consolidated Farm Loan	2¼	1959	50,000	49,700.00	50,000.00
"	" " "	2½	1960	50,000	49,000.00	49,300.00
State of Israel	Development Issue	4	1969	1,000	1,000.00	1,000.00
United States of America	Treasury	2⅛	1960	25,000	24,350.00	24,500.00
"	Treasury	2¼	1956–59	25,000	25,000.00	24,800.00
"	Treasury	2½	1958	25,000	25,000.00	25,000.00
"	Treasury	2¼	6–59/62	60,000	57,120.00	59,000.00
"	Treasury	2¼	12–59/62	20,000	19,040.00	19,700.00
"	Treasury	2½	1963	50,000	47,450.00	48,400.00
"	Treasury	2¾	1961	80,000	78,400.00	79,000.00
"	Savings K	2.76	1966	50,000	48,350.00	50,000.00
					424,410.00	430,700.00
		%		Shares		
Stock—Preferred						
U. S. Rubber Co.	Non-Cumulative First	8		100	14,200.00	15,062.50
Certificates of Interest						
Texas American Syndicate				1,395	1.00	1.00
Totals—Exhibit A					438,611.00	445,763.50

Trust Note Receivable	
N. Papanicolas—Secured by 1225 New York Avenue, NW. Due June 17, 1962. Interest 5%—Exhibit A	72,882.44

ASSETS OF LOAN FUNDS

August 31, 1958

Funds	Total	Cash	Loans Receivable
Himes Loan Fund	17,258.02	10,811.97	6,446.05
Home Economics Loan Fund	382.35	382.35	
Kellogg Loan Fund	20,460.61	4,209.22	16,251.39
Law Association Loan Fund	1,944.98	927.73	1,017.25
Pfizer Loan Fund	1,046.61	446.61	600.00
Schoenfeld Loan Fund	2,004.00	854.00	1,150.00
School of Medicine Loan Fund	12,667.62	9,867.62	2,800.00
Sutherland Loan Fund	1,608.31	358.31	1,250.00
University Loan Fund	9,203.84	9,027.84	176.00
TOTAL—EXHIBIT A	66,576.34	36,885.65	29,690.69

SCHEDULE 4

ASSETS OF ENDOWMENT FUNDS

August 31, 1958

CONSOLIDATED ENDOWMENT FUNDS

				Value		
	Description	%	Due	Par	Market	Book
Bonds						
American Telephone and Telegraph Co.	Debenture	3⅞	1990	53,000	49,820.00	54,350.00
" " " " "	"	5	1983	50,000	53,500.00	50,700.00
		4	1995	2,000	2,000.00	2,000.00
Atchison, Topeka and Santa Fe Ry. Co.	General Mortgage	4	1995	100,000	99,200.00	100,000.00
Banks for Cooperatives	Cons. Col. Trust Debenture	1.7	1959	50,000	51,500.00	48,600.00
Beneficial Finance Co.	Debenture	5	1977	30,000	24,900.00	30,350.00
Boston Edison Co.	First Mortgage D	3⅛	1982	50,000	51,500.00	50,700.00
" " "	" " F	4⅝	1987	49,000	50,960.00	48,031.00
Central Maine Power Co.	First and General Mortgage W.	4⅞	1987	35,000	33,250.00	34,600.00
C. I. T. Financial Corp.	Debenture	3⅝	1970	35,000	34,650.00	34,550.00
Commercial Credit Co.	Debenture	4¼	1974	50,000	45,000.00	49,500.00
Commonwealth Edison Co.	First Mortgage R	3½	1986	50,000	45,500.00	49,800.00
Consolidated Edison Co. of N. Y.	First and Ref. Mortgage L.	3⅝	1986	50,000	52,500.00	50,500.00
Consolidated Natural Gas Co.	Debenture	4⅞	1982	30,000	25,200.00	30,700.00
Consumers Power Co.	First Mortgage	3¼	1987	15,000	21,750.00	15,150.00
Dow Chemical Co.	Convertible Subordinated Deb.	3	1982	100,000	98,000.00	100,125.00
Federal Home Loan Bank	Notes	3⅛	1963	50,000	50,000.00	50,000.00
Federal Land Banks	Consolidated Farm Loan	4⅛	1967–72	100,000	105,000.00	100,100.00
" " "	" " "	4⅝	1969	10,000	9,940.00	10,000.00
Federal Nat'l Mtg. Ass'n Mgt. and Liq. Functions—Notes		3⅝	1960			

Florida Power and Light Co.	*First Mortgage*	*4⅝*	*1987*	*50,000*	*50,500.00*	*51,000.00*
General Electric Co.	*Debenture*	*3½*	*1976*	*50,000*	*47,000.00*	*50,100.00*
General Motors Acceptance Corp.	*Debenture*	*3½*	*1972*	*40,000*	*36,800.00*	*40,000.00*
General Telephone Co. of California	*First Mortgage K*	*5*	*1987*	*50,000*	*51,500.00*	*50,000.00*
Georgia Power Co.	*First Mortgage*	*5¼*	*1987*	*46,000*	*47,840.00*	*47,012.00*
Great Northern Railway Co.	General Mortgage D	4½	1976	25,000	25,500.00	25,100.00
Illinois Bell Telephone Co.	First Mortgage A	2¾	1981	30,000	23,100.00	28,300.00
International Bank for Rec. and Dev.	Twenty-one years	4¼	1978	34,000	32,640.00	33,400.00
" " " " " "	Twenty years	4½	1977	50,000	50,000.00	50,000.00
Interstate Power Co.	First Mortgage	5	1987	50,000	51,500.00	50,000.00
Metropolitan Edison Co.	First Mortgage	4⅞	1987	50,000	52,000.00	50,700.00
National Fuel Gas Co.	Sinking Fund Debenture	5½	1982	15,000	15,900.00	15,150.00
New Jersey Bell Telephone Co.	Debenture	3⅛	1988	25,000	22,250.00	25,150.00
New York Central Railroad Co.	Refunding and Improvement A	4½	2013	30,000	18,000.00	25,100.00
New York State Electric and Gas Co.	First Mortgage	4⅝	1987	50,000	50,000.00	50,700.00
New York Telephone Co.	Refunding Mortgage J	4½	1991	50,000	51,000.00	50,800.00
Northern Natural Gas Co.	Sinking Fund Debenture	4½	1976	50,000	51,000.00	49,900.00
Northern States Power Co.	First Mortgage	4⅝	1987	50,000	51,500.00	50,000.00
Northwestern Bell Telephone Co.	Debenture	4⅜	1989	50,000	50,500.00	50,400.00
Pacific Gas and Electric Co.	First and Refunding Mortgage	5	1989	50,000	53,500.00	50,350.00
Pacific Telephone and Telegraph Co.	Debenture	5⅛	1980	50,000	54,000.00	51,150.00

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1958

CONSOLIDATED ENDOWMENT FUNDS (Continued)

Bonds (Continued)	Description	%	Due	Value		
				Par	Market	Book
Pennsylvania Railroad Co.	General Mortgage E	4¼	1984	25,000	18,250.00	26,150.00
" " "	Consolidated Mortgage	4½	1960	1,000	1,000.00	1,000.00
Potomac Edison Co.	First Mortgage Collateral Trust	4⅝	1987	50,000	50,000.00	48,500.00
Potomac Electric Power Co.	First Mortgage	3⅝	1991	40,000	36,000.00	39,650.00
Procter and Gamble Co.	Debenture	3⅞	1981	35,000	34,300.00	35,000.00
Public Service Co. of Colorado	First Mortgage	4⅜	1987	50,000	49,500.00	50,000.00
Public Service Electric and Gas Co.	First and Refunding Mortgage	4⅜	1986	50,000	49,500.00	50,550.00
Radio Corporation of America	Convertible Subordinated Deb.	3½	1980	50,000	46,500.00	55,150.00
R. J. Reynolds Tobacco Co.	Debenture	3	1973	30,000	27,000.00	30,000.00
Sears Roebuck Acceptance Corp.	Debenture	4⅝	1972	50,000	51,000.00	49,700.00
Service Pipe Line Co.	Sinking Fund Debenture	3.2	1982	25,000	23,250.00	25,000.00
Southern Bell Telephone Co.	Debenture	5	1986	50,000	52,500.00	51,100.00
Southern California Gas Co.	First Mortgage C	5⅛	1983	50,000	52,500.00	50,850.00
Southern Railway Co.	First Consolidated Mortgage	5	1994	1,000	1,060.00	1,150.00
State Loan and Finance Corp.	Sinking Fund Debenture	3¾	1966	5,000	4,900.00	5,000.00
" " " " "	Sinking Fund Subordinated Deb.	5	1960	20,000	20,000.00	20,000.00
Tennessee Gas Transmission Co.	Debenture	4¼	1974	24,000	21,120.00	24,350.00
" " " "	First Mortgage Pipe Line	4¾	1976	25,000	24,000.00	25,100.00

United Gas Corp.	*Sinking Fund Debenture*	*4⅜*	*1972*	*18,000*	*17,640.00*	*18,267.22*
" " "	*First Mortgage Collateral Trust*	*4½*	*1977*	*49,000*	*49,000.00*	*49,635.80*
United States of America	Treasury	2¼	1959–62	30,000	28,560.00	30,000.00
"	Treasury	2½	1961	56,000	54,264.00	55,800.00
"	Treasury	2½	1967–72	8,000	7,056.00	7,850.00
"	Treasury	2⅝	1965	20,000	18,820.00	20,000.00
"	Treasury B	2¾	1975–80	10,000	9,090.00	10,000.00
"	Treasury	3¼	1985	60,000	55,080.00	60,300.00
"	Treasury	4	1969	50,000	50,750.00	50,000.00
"	Treasury	3½	1990	200,000	189,600.00	200,000.00
"	Savings F	2.53	1958	200	196.00	148.00
"	Savings K	2.76	1966	25,000	24,175.00	25,000.00
"	Savings K	2.76	1966	50,000	48,350.00	50,000.00
"	Savings K	2.76	1967	50,000	48,350.00	50,000.00
"	Treasury Bills	.8	1958	200,000	199,867.00	199,866.67
"	Treasury Bills	1.43	1958	100,000	99,837.00	99,837.14
"	Treasury Notes	4	1961	256,000	259,840.00	256,000.00
"	Treasury Notes	4	1962	100,000	101,100.00	100,000.00
Washington Gas Light Co.	General Mortgage	5	1960	6,000	6,060.00	6,070.00
" " " "	Refunding Mortgage	5	1982	50,000	50,500.00	50,000.00
Western Massachusetts Electric Co.	First Mortgage C	4⅜	1987	50,000	49,000.00	49,850.00
West Shore Railroad Co.	Guaranteed First Mortgage Reg.	4	2361	26,000	13,260.00	22,700.00
Wisconsin Telephone Co.	Debenture	4½	1992	50,000	50,500.00	50,600.00
					3,783,475.00	3,854,242.83

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1958

CONSOLIDATED ENDOWMENT FUNDS (Continued)

				Value	
Stocks—Preferred	Description	Rate or %	Shares	Market	Book
American Smelting and Refining	Cumulative	7	120	17,280.00	17,496.70
Appalachian Electric Power Co.	Cumulative	4½	100	9,600.00	10,600.00
Atchison, Topeka and Santa Fe Ry. Co.	Non-Cumulative	5	600	6,000.00	5,987.50
Cleveland and Pittsburg R. R. Co.	Guaranteed	7	100	6,300.00	8,500.00
Connecticut Light and Power Co.	Cumulative	$2.20	400	18,000.00	21,008.32
Consolidated Edison Co. of New York	Cumulative	$5.00	300	30,600.00	32,386.17
Corning Glass Works	Cumulative	3½	240	20,880.00	24,000.00
Detroit, Hillsdale and S. W. R. R.	Guaranteed	4	163	9,128.00	10,432.00
General Motors Corporation	Cumulative	$3.75	200	16,600.00	20,000.00
" " "	Cumulative	$5.00	100	10,900.00	12,525.25
General Shoe Corporation	Cumulative	$3.50	50	3,250.00	5,180.00
Gold and Stock Telegraph Co.	Guaranteed	6	100	17,000.00	11,700.00
Gulf Power Co.	Cumulative	4.64	100	9,700.00	10,300.00

Hecht Co.	Cumulative	3¾	50	3,800.00	5,150.00
H. J. Heinz Co.	Cumulative	3.65	200	17,000.00	20,550.00
International Harvester	Cumulative	7	100	14,800.00	18,204.43
Marine Midland Corporation	Cumulative Convertible, Par Value $50	4	100	5,900.00	5,338.50
May Department Stores Co.	Cumulative	$3.75	200	15,200.00	20,700.00
McCrory Stores Corporation	Cumulative Convertible	3½	200	14,800.00	20,670.00
Merck and Co.	Cumulative	$3.50	105	8,190.00	10,497.50
Oliver Corp.	Cumulative Convertible	4½	200	16,800.00	21,520.34
Pacific Gas and Electric Co.	Redeemable First, Par Value $25	4.8	1,000	24,000.00	27,250.00
Pacific Lighting Corporation	Cumulative Convertible	$4.75	300	37,200.00	29,700.00
Panhandle Eastern Pipe Line	Cumulative	4	200	18,800.00	20,172.40
Pennsylvania Electric Co.	Cumulative C	3.7	200	14,800.00	20,500.00
Philadelphia Electric Co.	Cumulative	3.8	100	8,600.00	10,270.00
R. J. Reynolds Tobacco Co.	Cumulative	3.6	100	8,400.00	10,017.84
Rogers, George A., and Co.	Cumulative First	$6.00	1	100.00	100.00
Virginia Electric and Power Co.	Cumulative	$4.04	300	25,800.00	30,681.00
				409,428.00	461,438.65

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1958

CONSOLIDATED ENDOWMENT FUNDS (Continued)

		Value	
Stocks—Common	Shares	Market	Book
Allis-Chalmers Manufacturing Co.	1,000	26,000.00	21,347.00
Aluminium Co. of Canada, Ltd.	2,640	76,560.00	106,170.00
American Cyanamid Co.	600	29,400.00	22,252.44
American Electric Power Co.	1,127	47,334.00	13,587.71
American Home Products	38	3,990.00	3,040.00
American Metal Climax, Inc.	1,627	39,048.00	45,334.94
American Telephone and Telegraph Co.	382	70,288.00	58,069.82
Chrysler Corporation	220	11,220.00	12,947.75
Coca-Cola Co.	200	22,800.00	24,294.55
Columbian Carbon Co.	300	12,300.00	14,215.85
Commercial Credit Co.	500	30,500.00	20,163.14
Commonwealth Edison Co.	1,184	56,832.00	29,561.74
Continental Can Co.	88	4,312.00	3,348.32
Continental Illinois National Bank and Trust Co. of Chicago	449	40,859.00	16,893.78
Continental Insurance Co.	400	20,800.00	18,088.35
Continental Oil Co.	840	48,720.00	9,211.44

duPont (E. I.) de Nemours and Co., Inc.	56	10,920.00	4,907.00
Eastman Kodak Co.	347	41,293.00	13,241.52
Firstamerica Corporation	1,000	19,000.00	17,755.00
First National City Bank (New York)	224	15,232.00	14,721.03
Ford Motor Co.	500	20,500.00	32,250.00
General American Transportation Corporation	400	36,800.00	27,060.34
General Electric Co.	320	20,480.00	6,581.25
General Motors Corporation	3,457	148,651.00	39,603.99
Goodyear Tire and Rubber Co.	1,039	92,471.00	16,387.88
International Nickel Co. of Canada, Ltd.	200	16,600.00	12,035.25
Kennecott Copper Corporation	300	27,900.00	18,227.50
Marine Midland Corporation	1,700	37,400.00	20,875.30
Mergenthaler Linotype Co.	13	559.00	609.52
Monsanto Chemical Co.	700	23,800.00	20,185.79
National Fuel Gas Co.	1,650	34,650.00	34,979.49
New York Air Brake Co.	400	7,600.00	8,646.84
Ohio Oil Co.	600	24,000.00	20,218.97
Panhandle Eastern Pipe Line Co.	400	20,400.00	14,684.95
Peoples Drug Stores, Inc.	400	14,800.00	14,585.20
Pfizer, Chas., and Co., Inc.	357	25,704.00	15,219.02

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1958

CONSOLIDATED ENDOWMENT FUNDS (Continued)

	Shares	Value	
		Market	Book
Stocks—Common (Continued)			
Phelps Dodge	600	31,800.00	19,207.25
Public Service Electric and Gas Co.	500	17,000.00	15,992.09
Reliable Stores Corp.	550	7,700.00	8,721.43
R. J. Reynolds Tobacco Co.	100	7,700.00	5,112.50
Riggs National Bank (Washington, D. C.)	679	88,270.00	62,455.00
Security Storage of Washington	335	11,055.00	5,058.50
Socony Mobil Oil Co., Inc.	2,104	98,888.00	27,962.97
Southern California Edison Co.	853	45,209.00	26,061.55
Standard Oil Co. of California	1,576	80,376.00	16,171.02
Suburban Trust Co.	360	20,880.00	20,880.00
Sunray Mid-Continent Oil Co.	1,155	30,030.00	25,300.00
Transamerica Corporation	1,000	25,000.00	24,686.90
Travelers Insurance Co.	1,000	82,000.00	16,045.68
Union Carbide Corporation	45	4,860.00	3,802.50
United Gas Corporation	915	32,025.00	16,922.35
Woolworth, F. W., Co.	420	19,740.00	20,541.27
Wm. Wrigley Jr., Co.	10	870.00	707.50
		1,783,126.00	1,086.931.18
Total Stocks and Bonds		5,976,029.00	5,402,612.66

	%		
TRUST NOTES RECEIVABLE			
Crowe, F. C.—Secured by 160 acres of land in Pemiscot County, Missouri. Due $5,954.46 each December 15 until paid in full	4		17,863.39
Kersey, A. P.—Secured by 480 acres of land in Pemiscot County, Missouri. Due December 15, 1960	4		12,500.00
			30,363.39
REAL ESTATE—Strong Hall, 620 21st Street, NW. Lots 19–20–818–819, Square 80			192,110.00
CASH			17,416.87
TOTALS { Consolidated Endowment Funds		5,540,059.22	
TOTALS { Reserve for Protection of Consolidated Endowment Funds		102,443.70	5,642,502.92

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1958

SCOTTISH RITE FUND

Bonds	Description	%	Due	Par	Value	
					Market	Book
American Telephone and Telegraph Co.	Debenture	2¾	1980	25,000	19,750.00	25,000.00
Federal Nat'l Mtg. Ass'n Mgt. and Liq.	Functions—Notes	3⅝	1960	10,000	9,940.00	10,000.00
International Bank for Rec. and Dev.	Twenty-one years	4¼	1978	16,000	15,360.00	15,750.00
Lexington and Eastern Railway Co.	First Mortgage	5	1965	12,000	12,120.00	12,360.00
Northern Pacific Railway Co.	Prior Lien Railway and Land Grant	4	1997	25,000	22,750.00	26,500.00
State Loan and Finance Corporation	Sinking Fund Debenture	3¾	1966	20,000	19,600.00	20,000.00
" " " " "	Sinking Fund Subordinated Deb.	5	1960	5,000	5,000.00	5,000.00
Tennessee Gas Transmission Co.	Debenture	4¼	1974	15,000	13,200.00	15,200.00
United States of America	Treasury	2¼	1959–62	72,000	68,544.00	72,000.00
"	Treasury	3¼	1978–83	50,000	46,250.00	50,000.00
"	Treasury B	2¾	1975–80	25,000	22,725.00	25,000.00
"	Treasury	3¼	1985	6,000	5,508.00	6,030.00
"	Treasury	3½	1990	25,000	23,700.00	25,000.00
"	Savings G	2½	1962	40,000	38,680.00	40,000.00
"	Savings K	2.76	1966	100,000	96,700.00	100,000.00
"	Savings K	2.76	1967	50,000	48,350.00	50,000.00
Washington Gas Light Co.	General Mortgage	5	1960	4,000	4,040.00	4,100.00
West Shore Railroad Co.	Guaranteed First Mortgage Regist.	4	2361	14,000	7,140.00	12,400.00
					479,357.00	514,340.00

Stocks—Preferred		Rate or %	Shares		
Baltimore Gas and Electric Co.	Cumulative C	4	130	11,700.00	13,312.73
Celanese Corporation of America	Cumulative A	4½	200	14,400.00	20,081.50
General Motors Corporation	Cumulative	$3.75	40	3,320.00	4,000.00
General Shoe Corporation	Cumulative	$3.50	50	3,250.00	5,120.50
Gulf Power Co.	Cumulative	4.64	100	9,700.00	10,300.00
Hecht Co.	Cumulative	3¾	150	11,400.00	15,450.00
Illinois Power Co.	Cumulative, Par Value $50	4.26	400	17,600.00	20,600.00
International Harvester Co.	Cumulative	7	50	7,400.00	9,124.08
Montgomery Ward and Co.	Cumulative A	$7.00	100	15,200.00	20,535.65
Pacific Telephone and Telegraph Co.	Cumulative	6	200	27,000.00	28,273.86
Philadelphia Electric Co.	Cumulative	3.8	100	8,600.00	10,270.00
Philip Morris and Co., Ltd., Inc.	Cumulative	4	138	10,764.00	14,007.00
R. J. Reynolds Tobacco Co.	Cumulative	3.60	200	16,800.00	20,018.77
				157,134.00	191,094.09

ASSETS OF ENDOWMENT FUNDS (Continued)

August 31, 1958

SCOTTISH RITE FUND (Continued)

	Shares	Value Market	Book
Stocks—Common			
American Telephone and Telegraph Co.	306	56,304.00	45,791.36
Cincinnati Milling Machine Co.	1000	38,000.00	18,609.10
Commonwealth Edison Co.	1,014	48,672.00	23,486.85
Continental Oil Co.	2,000	116,000.00	15,145.46
Ford Motor Co.	150	6,150.00	9,675.00
General Electric Co.	1,200	76,800.00	17,210.00
Goodyear Tire and Rubber Co.	899	80,011.00	10,368.93
Hecht Co.	500	15,500.00	14,562.50
International Nickel Co. of Canada, Ltd.	300	24,900.00	13,032.50
Montgomery Ward and Co.	1,500	58,500.00	32,577.25
New York State Electric and Gas Co.	550	25,850.00	22,025.15
Panhandle Eastern Pipe Line Co.	300	15,300.00	10,963.94
Pfizer, Chas., and Co.	119	8,568.00	5,073.00
Riggs National Bank (Washington, D. C.)	662	86,060.00	32,616.00
Standard Oil Co. of California	486	24,786.00	2,591.38
Standard Oil Co. of New Jersey	3,216	180,096.00	37,435.66
Union Carbide Corporation	900	97,200.00	25,122.50
United Gas Corporation	770	26,950.00	13,851.66
		985,647.00	350,138.24
Total Stocks and Bonds		1,622,138.00	1,055,572.33
Cash			7,163.97
Totals { Scottish Rite Fund		1,000,000.00	
Totals { Reserve for Protection of Scottish Rite Investments		62,736.30	1,062,736.30

SUMMARY OF ASSETS OF ENDOWMENT FUNDS

August 31, 1958

	Total	Consolidated	Scottish Rite
Investments			
Bonds	4,368,582.83	3,854,242.83	514,340.00
Preferred Stocks	652,532.74	461,438.65	191,094.09
Common Stocks	1,437,069.42	1,086,931.18	350,138.24
Trust Notes	30,363.39	30,363.39	
Real Estate	192,110.00	192,110.00	
	6,680,658.38	5,625,086.05	1,055,572.33
Cash	24,580.84	17,416.87	7,163.97
Total—Exhibit A	6,705,239.22	5,642,502.92	1,062,736.30

ENDOWMENT FUNDS—HELD IN TRUST BY OTHERS

August 31, 1958

Funds	Trustees	Book value
Andrews Scholarship Fund	American Security and Trust Co.	5,194.95
Coope Unrestricted Fund	Riggs National Bank	22,461.97
Fry Professorship Fund	National Savings and Trust Co.	115,264.93
Harvey Scholarship Fund	Riggs National Bank	4,650.63
Sanders Fellowship Fund	National Savings and Trust Co.	209,947.24
Sharpe School of Medicine Fund	National Savings and Trust Co.	8,216.79
Spencer Scholarship Fund	Northern Trust Co.	7,422.20
Total—Exhibit A		373,158.71

ASSETS OF PLANT FUNDS

August 31, 1958

CONSOLIDATED PLANT FUNDS

	Description	%	Due	Value Par	Market	Book
Bonds						
United States of America	Savings G	2½	1961	3,600	3,503.00	3,600.00
"	Savings K	2.76	1966	4,000	3,868.00	4,000.00
					7,371.00	7,600.00
Cash						46,706.79
Total						54,306.79

LAW CENTER FUND

	Description	%	Due	Par	Market	Book
Bonds						
Beneficial Industrial Loan Corp.	Debenture	2½	1961	35,000	32,900.00	34,514.03
Federal Land Banks	Consolidated Farm Loan	2¼	1960	15,000	14,685.00	14,900.00
Federal Nat'l Mtg. Ass'n Mgt. and Liq. Functions	Notes	3⅝	1960	50,000	49,700.00	50,200.00
United States of America	Savings G	2½	1961	15,000	14,595.00	14,700.00
					111,880.00	114,314.03
Stocks—Common					Shares	
Houston Oil Co. of Texas—Liquidating					40	1.00
Cash						31,511.82
Total						145,826.85

Schedule 7—Page 1

ASSETS OF PLANT FUNDS (Continued)

August 31, 1958

PAIRO FUND

					Value	
Bonds	Description	%	Due	Par	Market	Book
Morris and Essex Railroad Co.	First and Refunding Mortgage	3½	2000	6,000	3,000.00	4,700.00
Southern Pacific Co. (Oregon Lines)	First Mortgage A	4½	1977	5,000	4,700.00	5,100.00
United States of America	Treasury	2½	1964–69	500	444.00	500.00
"	Treasury	3¼	1978–83	1000	925.00	1,000.00
"	Certificates of Indebtedness	1¼	1959	20,000	19,820.00	20,000.00
					28,889.00	31,300.00
Stocks—Common				Shares		
American Security and Trust Co.				220	10,340.00	7,857.40
Mergenthaler Linotype Co.				309	13,287.00	15,806.25
Pennroad Corporation				105	1,785.00	1,300.00
					25,412.00	24,963.65
					54,301.00	
Cash						17,534.43
Total						73,798.08

Bonds					
Federal National Mortgage Association					
Management and Liquidating Functions—Notes	3⅜	1960	113,000	112,322.00	113,700.00
United States of America—Notes	4	1961	113,000	114,695.00	113,000.00
				227,017.00	226,700.00
Cash					13,018.36
Total					239,718.36

SUMMARY OF ASSETS OF PLANT FUNDS

August 31, 1958

	Total	Consolidated	Ford	Law Center	Pairo
Investments					
Bonds	379,914.03	7,600.00	226,700.00	114,314.03	31,300.00
Common Stocks	24,964.65	....	....	1.00	24,963.65
	404,878.68	7,600.00	226,700.00	114,315.03	56,263.65
Cash	108,771.40	46,706.79	13,018.36	31,511.82	17,534.43
Totals—Exhibit A	513,650.08	54,306.79	239,718.36	145,826.85	73,798.08

LAND AND BUILDINGS

For the Year Ended August 31, 1958

Building or Location	Lot	Square	Year Acquired or Erected	Balance August 31, 1957	Net Additions	Balance August 31, 1958
Adams Hall	824	120	1957	445,000.00	195,718.60	640,718.60
Alumni Office	23	56	1954	15,000.00	....	15,000.00
Bacon Hall	39	102	1956	152,926.09	129,746.12	282,672.21
Biological Sciences Building C	Part of 834	102	1914–35	151,129.97	....	151,129.97
Book Store	Part of 843	79	1949	48,105.49	....	48,105.49
Cemetery Lot	343	52–56	1884	....	1.00	1.00
Chapin Hall	Part of 838	79	1948	85,301.23	....	85,301.23
Chemistry Storage Vault	Part of 834	102	1958	....	33,770.90	33,770.90
Classroom—Research Building, G Street	50	......	......	15,000.00	25,000.00	40,000.00
Corcoran Hall	Part of 834	102	1919–24	327,481.92	....	327,481.92
Faculty Parking Lot 14–16–17–18–19–20–24–25–26–27–28–29 800–801–802–805–823–828–829–830–832–833–834		56	1936	236,431.05	....	236,431.05
Field House Site 11–17–19–20–28–35–36–37–38–39–42–800–801 806–807–808–809–816–817–830		57	1956	301,125.00	38,227.97	339,352.97
Gymnasium	Part of 834	102	1924–25	58,331.44	....	58,331.44
Hall of Government	845–846	79	1918–38	329,745.14	....	329,745.14
Hospital	Entire Square	54	1945	7,666,690.45	3,498.19	7,670,188.64
Hospital Parking Lot 34–35–801 thru 808, 810 thru 815–824 827–828–830–831–833–834		40	1949	235,742.92	16,910.94	252,653.86
Law Center Building	....	......	1955	1,200.00	3,334.34	4,534.34
Lisner Auditorium	828–838–843	79	1929–41	879,976.91	....	879,976.91
Lisner Library	Part of 834	102	1912–39	384,029.52	....	384,029.52
Madison Hall	840	56	1957	425,000.00	170,126.75	595,126.75
Monroe Hall	844	79	1938–51	711,917.99	....	711,917.99

Nurses Home	844	55	1947	401,500.00	....	401,500.00
Pharmacology Laboratory	27–28–816–817	79	1944	100,091.18	....	100,091.18
Physics Laboratory	Part of 843	79	1947	26,075.12	....	26,075.12
President's Office	Part of 834	102	1936	11,700.00	....	11,700.00
Samson Hall	Part of 834	102	1923–30	57,583.87	17,302.05	74,885.92
School of Medicine	43	250	1882–1932	995,706.34	....	995,706.34
Shop, Stockroom	53	101	1943	26,761.24	....	26,761.24
Social Sciences Building D	Part of 834	102	1922–36	543,305.70	....	543,305.70
Sorority Hall—2112 G Street, NW	816	80	1948	30,000.00	....	30,000.00
" 2129 G Street, NW	805	79	1936	36,989.72	....	36,989.72
" 2131 G Street, NW	Part of 8	79	1935	25,500.00	....	25,500.00
" 802 21st Street, NW	35	77	1938	13,000.00	....	13,000.00
Staughton Hall	834–835	79	1941	62,574.67	....	62,574.67
Stockton Hall	Part of 834	102	1920–25	279,325.93	....	279,325.93
Student Activities Building	41	79	1947	75,000.00	....	75,000.00
Student Parking Lot—2314 I St., NW	831	41	1945–53	618,787.43	....	618,787.43
Student Union Building	804–836	79	1947–48	528,057.96	....	528,057.96
Tompkins Engineering Building	843	56	1953	843,357.22	170.33	843,527.55
Warwick Memorial Building*	Entire Square	39	1948–52	469,542.78	2,970.75	472,513.53
Welling Hall	15	55	1947	209,047.72	....	209,047.72

LAND AND BUILDINGS (Continued)

For the Year Ended August 31, 1958

Building or Location	Lot	Square	Year Acquired or Erected	Balance August 31, 1957	Net Additions	Balance August 31, 1958
G Street, NW—1910	C	121	1949	20,000.00		20,000.00
" 2002	27	103	1949	33,600.00		33,600.00
" 2024	16	103	1922	14,955.00		14,955.00
" 2026	15	103	1929	15,074.96		15,074.96
" 2030	13	103	1957	21,000.00		21,000.00
" 2033	Part of 834	102	1922	32,500.00		32,500.00
" 2106	817	80	1937	19,000.00		19,000.00
" 2108	41	80	1946	31,500.00		31,500.00
" 2110	40	80	1949	69,479.23		69,479.23
" 2114	815	80	1949	47,250.00		47,250.00
" 2116	A	80	1946	20,500.00		20,500.00
" 2118	B	80	1946	17,500.00		17,500.00
" 2135	807	79	1943	14,000.00		14,000.00
" 2220	26	57	1956	7,800.00		7,800.00
" 2222	25	57	1948	8,800.00		8,800.00
" 2313-15-17-19-21	803-829	42	1947	23,400.00		23,400.00
H Street, NW—1909	800	119	1948	32,500.00		32,500.00
" 1911-13	3	119	1948	67,711.70		67,711.70
" 1921	802	119	1952	32,500.00		32,500.00
" 1923	803	119	1949	38,000.00		38,000.00
" 2001	55-86-800 thru 805	101	1956	180,000.00	307.20	180,307.20
" 2011	806	101	1943	13,000.00		

″	2017	810	101	1954	25,000.00		25,000.00
″	2020	Part of 834	102	1922	98,516.71		98,516.71
″	2023	51	101	1954	12,000.00		12,000.00
″	2025	52	101	1945	21,000.00		21,000.00
″	2027	813	101	1941	11,000.00		11,000.00
″	2029	814	101	1945	11,500.00		11,500.00
″	2031	815	101	1948	13,000.00		13,000.00
″	2037	817	101	1940	23,500.00		23,500.00
″	2107–09	800–801	77	1956	42,246.31		42,246.31
″	2113	802–804–805	77	1940	42,431.25		42,431.25
″	2125	808	77	1954	21,000.00		21,000.00
″	2127	809	77	1946	7,500.00		7,500.00
″	2136	53 thru 59	79	1951	85,000.00		85,000.00
″	2137	810–811	77	1948	30,500.00		30,500.00
″	2142	D	79	1935	1,500.00		1,500.00
″	2142½	815	79	1940	3,000.00		3,000.00
″	2209	804	55	1945	6,650.00		6,650.00
″	2211	16	55	1948	16,125.00		16,125.00
″	2213	17	55	1946	13,000.00		13,000.00
″	2217	18–19–805	55	1944	32,500.00		32,500.00
″	2300	817	42	1942	10,750.00		10,750.00
″	2308	43	42	1948	7,900.00		7,900.00
″	2312	814	42	1948	7,000.00		7,000.00
″	2316	812	42	1947	9,600.00		9,600.00
″	2318	811	42	1955	7,000.00		7,000.00
″	2324	809	42	1956	4,000.00		4,000.00

LAND AND BUILDINGS (Continued)

For the Year Ended August 31, 1958

Building or Location	Lot	Square	Year Acquired or Erected	Balance August 31, 1957	Net Additions	Balance August 31, 1958
I Street, NW—2012	829–830–831	101	1945	68,000.00		68,000.00
" 2018	21	101	1946	50,000.00		50,000.00
" 2038	840	101	1942	10,000.00		10,000.00
" 2106	27	77	1947	11,800.00		11,800.00
" 2114	55–56–833–834	77	1947	39,650.00		39,650.00
" 2119	807	75	1957		6,500.00	6,500.00
" 2136	826	77	1948	15,000.00		15,000.00
" 2138	825	77	1945	5,000.00		5,000.00
" 2204	22	55	1949	12,000.00		12,000.00
19th Street, NW—804	22	119	1958		2,000.00	2,000.00
808	20	119	1949	30,000.00		30,000.00
20th Street, NW—700	Part of 834	102	1931	17,500.00		17,500.00
" 706	23	102	1950	36,870.03		36,870.03
" 712	Part of 834	102	1929	14,240.00		14,240.00
" 714	Part of 834	102	1930	14,500.00		14,500.00
" 716	Part of 834	102	1929	13,500.00		13,500.00
" 718	Part of 834	102	1929	20,000.00		20,000.00

21st Street, NW—604	23	80	1946	13,000.00		13,000.00
" 606–08	21–22	80	1935	12,500.00		12,500.00
" 713–15–17	Part of 834	102	1929	53,500.00		53,500.00
" 714	Part of 841	79	1931	40,000.00		40,000.00
" 716	Part of 841	79	1933	8,885.00		8,885.00
" 718	Part of 841	79	1939	16,422.00		16,422.00
" 810	31	77	1938	9,000.00		9,000.00
" 812	841	77	1954	21,000.00		21,000.00
" 814	840	77	1944	13,000.00		13,000.00
22nd Street, NW—715	24	79	1939	8,190.00		8,190.00
" 717	25	79	1940	10,143.00		10,143.00
" 719	810	79	1952	20,000.00		20,000.00
" 725	812–813	79	1938	8,750.00		8,750.00
" 727	814	79	1937	4,750.00		4,750.00
" 731	34	79	1945	7,600.00		7,600.00
" 800–02	802–803	55	1946	18,500.00		18,500.00
" 804	801	55	1956	16,500.00		16,500.00
" 806	800	55	1945	9,000.00		9,000.00
" 808	C	55	1946	14,000.00		14,000.00
" 810	839	55	1948	18,750.00		18,750.00
" 817	817–818–819	77	1948	35,800.00		35,800.00
" 818	831	55	1952	25,000.00		25,000.00
" 820	830	55	1945	7,000.00		7,000.00
" 822	829	55	1947	9,250.00		9,250.00
" 835	50	77	1956	9,500.00		9,500.00
" 909	815	75	1946	11,000.00		11,000.00
" 911	816	75	1950	12,000.00		12,000.00
" 921	850	75	1948	12,500.00		12,500.00
" 923	822	75	1958		12,000.00	12,000.00

LAND AND BUILDINGS (Continued)

For the Year Ended August 31, 1958

Building or Location	Lot	Square	Year Acquired or Erected	Balance August 31, 1957	Net Additions	Balance August 31, 1958
23rd Street, NW—611-13	29–821 822–824–825	57	1948	13,500.00		13,500.00
" 706	827	42	1942	3,675.00		3,675.00
" 716	825	42	1944	7,425.00		7,425.00
" 718	824	42	1949	11,000.00	95.00	11,095.00
" 734	819	42	1942	4,500.00		4,500.00
" 736	818	42	1942	3,000.00		3,000.00
" 908	30	40	1949	17,750.00		17,750.00
" 910	29	40	1953	16,500.00		16,500.00
" 914	27	40	1957	20,000.00		20,000.00
" 918	25	40	1957	23,000.00		23,000.00
" 924	22	40	1957	16,500.00		16,500.00
24th Street, NW—737	807–808	42	1947	21,440.00		21,440.00

Pennsylvania Avenue, NW—						
" 1900-02-04-06-08	12-19	119	1949	180,000.00	4,275.80	184,275.80
" 1914-16	812	119	1950	70,000.00	....	70,000.00
" 1920	813	119	1949	70,000.00	....	70,000.00
" 2100	800-801-840	75	1945	103,000.00	....	103,000.00
" 2114-16-18-24	21-833-836-837	75	1956	106,000.00	....	106,000.00
" 2130	831	75	1950	30,000.00	....	30,000.00
" 2140	829	75	1958	....	24,000.00	24,000.00
New Hampshire Avenue, NW—923-25	816-817	40	1957	28,042.00	....	28,042.00
939	818	40	1953	11,000.00	....	11,000.00
				20,707,264.19	685,955.94	21,393,220.13
Less Depreciation—Hospital				540,000.00	60,000.00	600,000.00
				20,167,264.19	625,955.94	
Total—Exhibit A						20,793,220.13

*The University has a contingent asset represented by an option to purchase from The Washington Home for Foundlings land valued at $55,946.00 for $1.00 plus the fair market value, less depreciation, of the portion of the Warwick Memorial Building, deeded to The Washington Home for Foundlings, at the time of the exercise of such option.

EQUIPMENT

For the Year Ended August 31, 1958

	Balance August 31, 1957	Additions	Balance August 31, 1958
Adams Hall	....	39,976.45	39,976.45
Administration	329,261.20	48,864.26	378,125.46
Bookstores	22,272.42	229.94	22,502.36
Cancer Clinic	68,886.59	2,278.85	71,165.44
Faculty Dining Room	2,284.48	....	2,284.48
Gymnasium	2,927.37	....	2,927.37
Hospital	1,515,114.07	118,343.20	1,633,457.27
Human Resources Laboratory	48,324.48	....	48,324.48
Instruction—General	210,889.29	16,936.03	227,825.32
" Law School	4,507.56	8,631.00	13,138.56
" School of Engineering	260,538.04	29,410.49	289,948.53
" School of Medicine	165,633.73	41,195.23	206,828.96
" School of Pharmacy	25,355.94	570.06	25,926.00
Interns Residence	4,302.62	....	4,302.62
Library Books—General	339,033.70	30,681.71	369,715.41
" Law School	159,124.13	16,014.44	175,138.57
" School of Medicine	58,714.59	9,093.67	67,808.26

Lisner Auditorium	94,844.28	....	94,844.28
Lisner Library	60,086.45	721.00	60,807.45
Madison Hall	6,615.78	50,259.73	56,875.51
Motor Vehicles	4,352.01	....	4,352.01
Nurses Home	9,710.60	....	9,710.60
Strong Hall	18,200.00	....	18,200.00
Student Union	36,406.09	240.10	36,646.19
Welling Hall	30,805.34	29,144.30	59,949.64
	3,478,190.76	442,590.46	3,920,781.22
Less Depreciation Cancer Clinic Equipment	10,500.00	....	10,500.00
" Hospital Equipment	1,044,000.00	130,000.00	1,174,000.00
	1,054,500.00	130,000.00	1,184,500.00
Totals—Exhibit A	2,423,690.76	312,590.46	2,736,281.22

Schedule 9

DESIGNATED CURRENT FUNDS—SPONSORED RESEARCH

For the Year Ended August 31, 1958

Funds	Balance August 31, 1957	Receipts	Disbursements			Balance August 31, 1958
			Salaries	Other Expense	Total	
School of Medicine						
Abbott, Lilly, and Upjohn	11,668.15	17,750.00	15,924.07	4,270.18	20,194.25	9,223.90
American Cancer Society—IN-7		4,660.00	2,465.00	645.29	3,110.29	1,549.71
" T-14	1,891.00	9,385.09	8,040.00	2,358.65	10,398.65	877.44
" VI-19A	3,378.86	3,125.83	3,474.35	2,155.06	5,629.41	875.28
" T-41		4,907.00	1,023.33	681.67	1,705.00	3,202.00
" P-144		4,907.00	2,240.00	1,691.47	3,931.47	975.53
" E-IR-24-J		2,490.00	1,336.16	570.62	1,906.78	583.22
Arthritis	38,113.84	17,470.86	15,353.68	7,554.60	22,908.28	32,676.42
Bolton	3,724.73			1,380.85	1,380.85	2,343.88
Bristol-Meyers Co.	5,306.12		773.33	4,097.22	4,870.55	435.57
Cancer Control	839.91					839.91
Cardiology—1	329.44					329.44
" 2	1,710.00					1,710.00
Ciba Pharmaceutical Products—1	518.98					518.98
" 2	166.87			87.50	87.50	79.37
" 3	1,201.62		739.40	16.64	756.04	445.58
" 4	20.04			20.04	20.04	
Cooper		4,336.05	3,837.77	498.28	4,336.05	
Damon Runyon Memorial—DRG-42-G	4,394.94	(−239.89)	1,978.49	2,176.56	4,155.05	
" DRG-42-H		6,039.89	560.00	389.50	949.50	5,090.39
" DRG-338	110.58	(−110.58)				
" DRG-437		8,110.58	650.00	4,599.91	5,249.91	2,860.67
Davis and Geck	237.21					237.21
Emerson Drug Co.	3,050.00	600.00	800.00	2,208.00	3,008.00	642.00
Freeman, Keen, Memorial	965.15	(−965.15)				
Gray Pharmaceutical Co.	460.00					460.00
Hematology		2,277.26	559.16		559.16	1,718.10

Hodgkins	*906.00*		*300.00*	*36.75*	*336.75*	*569.25*
Institute for the Study of Analgesic and Sedative Drugs	*6,594.18*	*3,975.00*	*3,120.00*	*1,605.74*	*4,725.74*	*5,843.44*
Johnson, Leslie W., Memorial	*1,080.00*					1,080.00
Keystone Chemurgic Corp.	*30.63*			2.00	2.00	28.63
Laboratories for Pharmaceutical Development	*215.85*	1,230.00	160.00	946.80	1,106.80	339.05
Lasdon Foundation—1	2,087.85	(−2,087.85)				
" 2	11.12			11.12	11.12	
Lederle Laboratories	746.77			625.00	625.00	121.77
Lewis-Howe Co.		5,280.00	640.00	2,386.48	3,026.48	2,253.52
Life Insurance Medical—G-57-10	8,723.91	8,250.00	4,374.96	1,911.81	6,286.77	10,687.14
Lilly Co.—2	74.77					74.77
" 3	2,719.92		981.00	54.47	1,035.47	1,684.45
" 4	356.25					356.25
Mallinckrodt Chemical Works	734.29	(−734.29)				
Marcelle Fleischmann Foundation—2	158.61		150.00	8.61	158.61	
Mead Johnson Co.	265.46			265.46	265.46	
Merck, Sharp, and Dohme	3,043.00		2,037.50	372.71	2,410.21	632.79
" —Hypertension Studies		2,500.00	1,380.95	841.07	2,222.02	277.98
Meyer Foundation—Orthopedics	260.89			154.50	154.50	106.39
" Fellowship	500.00			500.00	500.00	
" Heart	1,204.28			1,163.00	1,163.00	41.28
" Hematology Training	1,250.00			1,250.00	1,250.00	
" Initiation and Continuation		10,000.00		522.62	522.62	9,477.38
" Renal Project		5,721.00	2,970.00	1,906.04	4,876.04	844.96
Miles-Ames Laboratories	1,573.36	4,640.00	666.66	5,081.19	5,747.85	465.51
Mothers Health Clinic	1,400.80	64.00		104.25	104.25	1,360.55
Multiple Sclerosis—Center	94.60			44.30	44.30	50.30
" Society—4	393.19	5,049.68	3,799.95	1,642.92	5,442.87	
" Society—5		6,166.75	4,071.46	1,845.12	5,916.58	250.17
" Association—Diagnostic Laboratory	6,332.97	7,000.00		8,005.28	8,005.28	5,327.69
National Academy of Sciences	156.76	(−7.58)		149.18	149.18	
National Drug Co.	24.45					24.45

DESIGNATED CURRENT FUNDS—SPONSORED RESEARCH (Continued)

For the Year Ended August 31, 1958

FUNDS	Balance August 31, 1957	Receipts	Disbursements			Balance August 31, 1958
			Salaries	Other Expense	Total	
SCHOOL OF MEDICINE (Continued)						
National Foundation for Infantile Paralysis—CPEP-AP-33	457.63			457.63	457.63	
" CVRE-97-1955		(−16.76)		(−16.76)	(−16.76)	
" CPEP-99	22,163.03	(−1,411.05)	16,659.80	3,996.98	20,656.78	95.20
" CPEP-99-C		24,900.09	2,566.64	387.55	2,954.19	21,945.90
National Science Foundation—G-4911		10,700.00	1,117.56	6,394.26	7,511.82	3,188.18
" NSF-5805		4,700.00				4,700.00
Neurology	2.29	1,795.15		1,013.15	1,013.15	784.29
Obstetrics and Gynecology	1,800.76	6,810.99		2,492.33	2,492.33	6,119.42
Ophthalmology	1,435.36					1,435.36
Parke Davis—1	669.00		654.50	14.50	669.00	
" 2	3,517.32	5,000.00	4,408.81	899.16	5,307.97	3,209.35
Rexall Drug Co.		840.00	200.00	160.88	360.88	479.12
Sandoz Pharmaceuticals, Inc.	4,148.00		(−200.00)	1,491.90	1,291.90	2,856.10
Schiede—1	773.86			773.86	773.86	
" 2		4,178.89	1,526.66	579.35	2,106.01	2,072.88
Searle, G. D., Co.—1	572.93			31.59	31.59	541.34
" 2	1,999.47	3,000.00	1,802.38	763.62	2,566.00	2,433.47
Squibb, E. R., and Sons	3,803.86		619.00	54.98	673.98	3,129.88
Sterling-Winthrop Institute		1,200.00	433.33	242.85	676.18	523.82
Surgery Department	356.91					356.91
United Airlines, Inc.—G. D. Searle and Co.	78.61			78.61	78.61	
Upjohn Co.	809.40		450.00	12.37	462.37	347.03
United States Air Force—AF-18-600-463		6,954.46	3,990.00	2,964.46	6,954.46	
" AF-18-600-853	294.88	(−294.88)				
United States Army—DA-49-007-MD-724		5,711.79	4,250.00	1,461.79	5,711.79	
United States Atomic Energy Commission—BM-23-58		15,569.00		13,155.43	13,155.43	2,413.57
" AT-30-1-1107	1,153.52	13,984.00	7,058.89	5,242.28	12,301.17	2,836.35

United States Navy—Nonr-761-02		*5,174.85*	*2,230.86*	*2,943.99*	*5,174.85*	
" Nonr-1321-00		*1,195.07*		*1,195.07*	*1,195.07*	
" Nonr-1848-00	*21.42*	*9,283.49*	*6,781.60*	*2,523.31*	*9,304.91*	
United States Public Health Service—SF-172		12,960.00	833.33	1,016.43	1,849.76	11,110.24
" FG-239	3,100.00			3,100.00	3,100.00	
" C-308-C9	15.36			15.36	15.36	
" CY-308-C10	10,313.50	(−318.00)	6,061.61	3,933.89	9,995.50	
" CY-308-C11		6,298.00	2,120.01	531.10	2,651.11	3,646.89
" E-314-C4	1,436.91	(−1,320.28)		116.63	116.63	
" E-314-C5	4,747.78	5,510.22	4,950.00	3,006.17	7,956.17	2,301.83
" E-314-C6		5,129.00				5,129.00
" FG-339		5,184.00		1,944.00	1,944.00	3,240.00
" A-408-C2	381.22	(−381.22)				
" A-408-C3	2,874.26	(−2,371.98)	50.00	452.28	502.28	
" A-408-C4	6,921.00	2,371.98	5,050.00	2,934.10	7,984.10	1,308.88
" B-798-C		(−9.19)		(−9.19)	(−9.19)	
" B-798-C2	16,714.18	9.19	12,750.66	3,315.97	16,066.63	656.74
" A-839-C		(−34.77)		(−34.77)	(−34.77)	
" A-839-C2	9,052.04	(−5,729.52)	1,870.00	1,452.52	3,322.52	
" A-839-C3		2,211.41	1,650.00	561.41	2,211.41	
" A-839-C4		4,965.29				4,965.29
" A-852-C		(−22.15)		(−22.15)	(−22.15)	
" A-852-C2	7,957.50	22.15	5,374.96	2,459.80	7,834.76	144.89
" M-965-C2	10,363.95	(−6,685.64)	2,582.42	1,095.89	3,678.31	
" B-1070	296.88	(−90.51)		206.37	206.37	
" B-1070-C	10,352.00	90.51	3,516.82	4,420.70	7,937.52	2,504.99
" A-1169	1,608.14	(−1,580.98)		27.16	27.16	
" A-1169-C	5,750.00	1,580.98	3,999.96	262.46	4,262.42	3,068.56
" H-1170-C5	6,841.40	(−174.01)	4,470.00	2,197.39	6,667.39	
" E-1301	4,369.62	(−4,161.33)		208.29	208.29	
" E-1301-C	7,500.00	4,161.33	4,410.00	3,151.15	7,561.15	4,100.18
" E-1393	1,042.10	(−149.64)	600.00	292.46	892.46	

DESIGNATED CURRENT FUNDS—SPONSORED RESEARCH (Continued)

For the Year Ended August 31, 1958

Funds		Balance August 31, 1957	Receipts	Disbursements			Balance August 31, 1958
				Salaries	Other Expense	Total	
School of Medicine (Continued)							
United States Public Health Service—	B-1480	2,245.00		769.65	1,440.31	2,209.96	35.04
"	E-1606	720.81	(−1.34)		719.47	719.47	
"	H-1739-C2	1,451.20			1,244.79	1,244.79	206.41
"	B-1838		4,487.00				4,487.00
"	H-1897-C2	1,418.53	(−396.57)		1,021.96	1,021.96	
"	H-1897-C3		8,050.00		3,394.14	3,394.14	4,655.86
"	A-1910	2,300.00			2,167.27	2,167.27	132.73
"	A-1949		7,619.00		4,451.76	4,451.76	3,167.24
"	H-1970-C2	2,572.98	(−277.77)		2,295.21	2,295.21	
"	H-2033-C2	31,437.16		1,862.50	21,017.42	22,879.92	8,557.24
"	H-2033-C3		14,864.77	2,752.24	1,272.78	4,025.02	10,839.75
"	H-2033-C4		17,250.00				17,250.00
"	H-2120-C	1,899.26	(−1,628.13)		271.13	271.13	
"	H-2120-C2		12,255.13	8,299.92	2,956.62	11,256.54	998.59
"	H-2120-C3		7,970.00				7,970.00
"	H-2274-C	595.69	(−12.06)		583.63	583.63	
"	H-2274-C2		19,515.06	8,437.92	7,363.29	15,801.21	3,713.85
"	H-2274-C3		11,157.00				11,157.00
"	C-2326-C2	3,188,26	(−4,071.88)		(−883.62)	(−883.62)	
"	CY-2326-C3	18,868.46	29,292.00	21,696.62	14,298.93	35,995.55	12,164.91
"	CY-2326-C4		33,363.88	7,309.36	2,507.75	9,817.11	23,546.77
"	H-2335	764.54	(−75.82)		688.72	688.72	
"	H-2335-C		8,700.82	4,275.30	3,626.95	7,902.25	798.57
"	H-2335-C2		4,486.01				4,486.01
"	C-2505-C	4,843.31		1,800.00	2,099.52	3,899.52	943.79
"	CY-2684-C	4,547.63			2,939.93	2,939.93	1,607.70
"	H-2731-R	6,054.21	(−2,850.80)	2,435.00	768.41	3,203.41	

"	H-2731-C	....	6,357.80	1,190.00	245.90	1,435.90	4,921.90
"	H-2746	8,615.30	(−595.10)	....	8,020.20	8,020.20	....
"	H-2746-C	....	12,095.10	....	8,319.15	8,319.15	3,775.95
"	C-2754	2,225.06	(−2,040.95)	....	184.11	184.11	....
"	C-2754-C	11,661.00	2,040.95	6,297.88	6,136.07	12,433.95	1,268.00
"	C-2754-C2	....	5,831.00	....	....	....	5,831.00
"	C-2770-C	16,991.17	(−9,366.69)	....	7,624.48	7,624.48	....
"	C-2770-C2	....	33,430.69	....	19,683.84	19,683.84	13,746.85
"	H-2954	11,040.00	....	3,434.28	6,477.44	9,911.72	1,128.28
"	CY-2978	26,976.57	(−26,102.34)	....	874.23	874.23	....
"	CY-2978-C	34,914.00	26,102.34	26,266.78	26,779.85	53,046.63	7,969.71
"	CY-2978-C2	....	21,126.33	....	....	....	21,126.33
"	CY-3131	12,160.03	(−3,197.33	6,160.00	2,802.70	8,962.70	....
"	C-3226	2,512.23	(−41.78)	1,000.00	1,470.45	2,470.45	....
"	C-3226-C	....	1,949.78	....	....	....	1,949.78
"	H-3281	2,254.00	....	12.00	1,029.23	1,041.23	1,212.77
"	CY-3761	....	9,951.00	4,974.84	1,695.58	6,670.42	3,280.58
"	CY-3761-C	....	4,976.00	....	....	....	4,976.00
"	GN-4812	1,309.34	(−639.84)	309.83	359.67	669.50	....
"	GN-4812-C	....	30,000.00	8,911.53	1,612.85	10,524.38	19,475.62
"	RG-4979	198.24	(−9.80)	....	188.44	188.44	....
"	RG-4979-C	6,019.00	9.80	3,949.65	1,958.16	5,907.81	120.99
"	HT-5015-C4	1,635.79	(−575.22)	....	1,060.57	1,060.57	....
"	HT-5015-C5	25,000.00	575.22	16,216.11	7,276.35	23,492.46	2,082.76
"	HT-5015-C6	....	12,500.00	....	....	....	12,500.00
"	2A-5090-A-C	3,672.00	....	....	....	....	3,672.00
"	HTS-5217	8,281.00	(−1,404.00)	....	6,877.00	6,877.00	....
"	HTS-5217-C	....	5,832.00	....	1,620.00	1,620.00	4,212.00
"	HF-5401	44.54	....	....	5.00	5.00	39.54
"	HF-5671	42.00	....	....	42.00	42.00	....
"	2M-5907-C5	784.86	(−187.99)	....	596.87	596.87	....

DESIGNATED CURRENT FUNDS—SPONSORED RESEARCH (Continued)

For the Year Ended August 31, 1958

Funds	Balance August 31, 1957	Receipts	Disbursements			Balance August 31, 1958
			Salaries	Other Expense	Total	
School of Medicine (Continued)						
United States Public Health Service—2M-5907-C6	14,444.00	14,444.00	22,249.92	6,092.10	28,342.02	545.98
" AF-6439	299.02	(−.16)		298.86	298.86	
" AF-6439-C		500.16		500.16	500.16	
United States Vocational Rehabilitation—166-59		2,675.00				2,675.00
Vick Chemical Co.		3,120.00	1,260.00	1,593.09	2,853.09	266.91
Wander Foundation	21.02	3,060.00	680.00	1,869.15	2,549.15	531.87
Warner-Chilcott Laboratories		7,087.85	5,561.03	1,101.00	6,662.03	425.82
Washington Heart Association—2	5.08			5.08	5.08	
" 3	261.26			149.28	149.28	111.98
" 4	.65			.65	.65	
" 5	1,090.66			958.72	958.72	131.94
" 6	5.33			5.33	5.33	
" 8	79.94			79.94	79.94	
" 9	8.14		8.14		8.14	
" 10	3,394.77		2,545.00	77.76	2,622.76	772.01
" 11	9.21			9.21	9.21	
" 12	700.00	1,300.00				2,000.00
" 13		3,200.00	2,400.00	800.00	3,200.00	
" 14		4,636.00		748.96	748.96	3,887.04
" 15		3,450.00	1,200.00	327.00	1,527.00	1,923.00
Wesix Foundation	2,522.00		2,174.52	320.88	2,495.40	26.60
Whitehall Pharmacal Co.	157.78	1,770.00	520.00	987.92	1,507.92	419.86
Wyeth Laboratories—1	137.60			58.70	58.70	78.90
" 2		900.00		590.00	590.00	310.00
	559,322.21	648,486.70	383,583.30	364,895.36	748,478.66	459,330.25

Arts and Sciences						
Draper Foundation	*11,821.48*	*14,495.65*	*7,583.00*	*4,136.96*	*11,719.96*	*14,597.17*
Evening Star		*2,500.00*		*2,339.77*	*2,339.77*	*160.23*
National Science Foundation—NSF-5706		*5,300.00*				*5,300.00*
Research Corporation—1	484.08		450.00	10.13	460.13	23.95
" 3	252.43		90.00		90.00	162.43
" 4	1,190.28		807.50	82.95	890.45	299.83
" 5		8,800.00				8,800.00
United States Air Force—AF-49-638-325		8,220.61	5,684.00	2,536.61	8,220.61	
" AF-18-600-1180		15,741.36	8,138.15	7,603.21	15,741.36	
United States Army—DA-49-106-QM-1		2,188,516.83	1,460,951.26	727,565.57	2,188,516.83	
" DA-49-106-QM-2		81,624.86	62,625.42	18,999.44	81,624.86	
" DA-18-064-CML-8	2,902.59	(−2,902.59)				
" DA-18-108-405-CML-44		41,274.43	20,708.55	20,565.88	41,274.43	
" DA-18-064-404-CML-163		172,939.66	137,095.15	35,844.51	172,939.66	
" DA-44-109-QM-650		363.80		363.80	363.80	
" DA-44-109-QM-1987		1,959.18	340.84	1,618.34	1,959.18	
" DA-109-2-2348		4,624.28	3,684.45	939.83	4,624.28	
United States Navy—Nonr-761-03		99,422.32	17,070.69	82,351.63	99,422.32	
" Nonr-761-05		186,415.99	123,559.16	62,856.83	186,415.99	
" Nord-9951		(−7,591.06)		(−7,683.80)	(−7,683.80)	92.74
" Nord-16441		19,631.43	12,499.92	7,131.51	19,631.43	
" Nord-17410		9,442.70	7,322.59	2,120.11	9,442.70	
" N7onr-41904		93,581.10	62,824.92	30,756.18	93,581.10	
" N7onr-41906		20,938.92	14,976.75	5,962.17	20,938.92	
United States Public Health Service—M-1508	6,680.27	(−2,889.69)	1,190.00	2,600.58	3,790.58	
United States Office of Education—SAE-7032		2,160.00	1,267.00	893.00	2,160.00	
United States Vocational Rehabilitation—10-57	897.84	(−551.10)		346.74	346.74	
" 10-58	10,873.00	10,873.00	6,917.50	13,966.86	20,884.36	861.64
" 10-59		2,400.00				2,400.00
	35,101.97	2,977,291.68	1,955,786.85	1,023,908.81	2,979,695.66	32,697.99

DESIGNATED CURRENT FUNDS—SPONSORED RESEARCH (Continued)

For the Year Ended August 31, 1958

Funds	Balance August 31, 1957	Receipts	Disbursements			Balance August 31, 1958
			Salaries	Other Expense	Total	
Cancer Clinic Building						
American Cancer Society—IN-7	....	6,156.00	23.00	1,960.22	1,983.22	4,172.78
" INSTR-24-J	11,784.08	(−10,867.71)	681.22	235.15	916.37	....
" P-IR-24-J1	....	6,456.00	4,275.54	1,203.94	5,479.48	976.52
" P-IR-24-J2	....	7,871.00	6,500.00	1,265.05	7,765.05	105.95
" P-IR-24-J3	....	2,150.00	1,829.00	321.00	2,150.00	....
" D. C. Division 13	3,513.12	....	2,962.31	550.81	3,513.12	....
" " 14	1,096.00	....	....	227.47	227.47	868.53
" " 15	....	14,800.00	11,387.32	1,950.21	13,337.53	1,462.47
American Medical Association	....	300.00	....	....	....	300.00
Cancer Clinic—Special	....	860.26	325.00	....	325.00	535.26
Cancer Therapy Training	3,333.34	....	....	3,333.34	3,333.34	....
Gynecological Cancer Research	....	4,000.00	....	....	....	4,000.00
National Research Council—CDTZ-3	1,105.00	(−1,105.00)	....	....	....	....
Stewart—1	29,735.40	25,000.00	13,656.90	6,509.12	20,166.02	34,569.38
U. S. Atomic Energy Commission—AT-30-1-1850	10,855.21	20,663.00	11,785.64	10,158.86	21,944.50	9,573.71
United States Public Health Service—H-142-C7	6,153.92	(−2,796.87)	1,220.61	2,136.44	3,357.05	....
" H-142-C8	....	28,228.87	14,765.98	8,315.55	23,081.53	5,147.34
" CT-517-C9	12,670.75	(−3,529.34)	8,005.86	1,135.55	9,141.41	....
" CT-517-C10	....	28,529.34	12,072.48	1,157.80	13,230.28	15,299.06
" CY-3777	....	20,635.00	....	2,310.10	2,310.10	18,324.90
" C-3818-A	....	2,298.00	150.00	980.48	1,130.48	1,167.52
	80,246.82	149,648.55	89,640.86	43,751.09	133,391.95	96,503.42

Engineering						
National Research Council	....	7,247.00	6,000.00	1,247.00	7,247.00	....
National Science Foundation—NSF-5660	....	14,000.00	234.00	83.00	317.00	13,683.00
" *NSF-5723*	....	2,700.00	....	....	....	2,700.00
United States Air Force—AF-49-638-359	....	1,376.72	994.47	382.25	1,376.72	....
United States Army—DA-22-079-ENG-194	....	9,004.75	3,674.29	5,330.46	9,004.75	....
United States Navy—Nonr-761-04	....	38.19	....	38.19	38.19	....
" N600-167-45550	....	13,799.53	8,924.87	4,874.66	13,799.53	....
	....	48,166.19	19,827.63	11,955.56	31,783.19	16,383.00
Law						
Rockport	....	750.00	....	....	....	750.00
Pharmacy						
Proprietary Association	215.70	....	....	....	....	215.70
Miscellaneous						
Overhead	....	42,127.00	....	42,127.00	42,127.00	....
Totals—Exhibit D	674,886.70	3,866,470.12	2,448,838.64	1,486,637.82	3,935,476.46	605,880.36

INVESTMENT INCOME

For the Year Ended August 31, 1958

FUNDS	Balance August 31, 1957	Net Income	Disbursements		Balance August 31, 1958
			Current Operations	Added to Principal	
ENDOWMENT FUNDS (SCHEDULE 12)					
UNRESTRICTED					
Acker		16.00	16.00		
Alumni		39.00	39.00		
American Airlines		41.00	41.00		
Bragg		13.00	13.00		
Campaign		10,032.93	10,032.93		
Coope		904.86	904.86		
Corcoran		11,808.00	11,808.00		
Davis		2,243.00	2,243.00		
Dulac		40.00	40.00		
Durst		107.00	107.00		
Goddard		1,803.00	1,803.00		
Haggett		53.00	53.00		
King		1,031.00	1,031.00		
Poole		53.00	53.00		
Reichelderfer		804.00	804.00		
River Raisin		53.00	53.00		
Sanders		113.00	113.00		
Sothern		268.00	268.00		
Subscription Gifts		672.00	672.00		
Syms		80.00	80.00		
Teller		7,347.00	7,347.00		
Trustees		84.00	84.00		
Walsh		5.00	5.00		
Weddell		536.00	536.00		

Withers		1,443.00	1,443.00		
Woodhull		2,682.00	2,682.00		
Schedule 1			42,324.79		
Total Unrestricted		42,324.79	42,324.79		
Designated					
Fellowship—King	21,566.00	4,100.00	3,470.00		22,196.00
" Miller	4,260.00	2,966.00	3,000.00		4,226.00
" Sanders		11,295.59	11,295.59		
Professorship—Alumni		45.00	45.00		
" Carroll	461.00	27.00			488.00
" Congressional		8,512.00	8,512.00		
" Depew		9,150.00	9,150.00		
" Elton		778.00	778.00		
" Ford Foundation		31,651.00	31,651.00		
" Fry (2 Funds)		10,470.00	9,000.00	1,470.00	
" Tompkins		103.00		103.00	
" Yulee	5,657.00	268.00			5,925.00
Columbian College—Burton		520.00	520.00		
Law School—Altizer		53.00	53.00		
" " Cummings		1,370.00	1,365.19	4.81	
School of Engineering—Howard	678.00	194.10	178.10		694.00
" " " School of Engineering		39.00	39.00		
School of Government—Rankin		15,002.00	15,002.00		
" " " Scottish Rite		60,231.36	60,231.36		

INVESTMENT INCOME (Continued)

For the Year Ended August 31, 1958

Funds	Balance August 31, 1957	Net Income	Disbursements		Balance August 31, 1958
			Current Operations	Added to Principal	
ENDOWMENT FUNDS (Continued) (Schedule 12)					
Designated (Continued)					
School of Medicine—Bartsch-Dunne		232.00	232.00		
" " " Borden		199.00	199.00		
" " " Collins	835.00	152.20	62.20		925.00
" " " Cooper	9,645.00	536.05	4,336.05		5,845.00
" " " Cummings		536.00	536.00		
" " " Eppley		53.00	53.00		
" " " Ford Foundation		81,146.00	81,146.00		
" " " Gardner		241.00	241.00		
" " " Lewis		2,219.00	2,219.00		
" " " Meyer		11,946.00	11,945.41	.59	
" " " Ruffin		3,083.00	3,083.00		
" " " School of Medicine		746.00	746.00		
" " " Sharpe		393.09	393.09		
School of Pharmacy—Gibbs		536.00	536.00		
Plant—Graduate		812.00	812.00		
" National University Library		986.00	986.00		
" Schouler National University Library		82.00	82.00		
			261,897.99		
Schedule 1			257,561.94		
Schedule 10			4,336.05		

Cancer Clinic—Cancer Clinic		23.00	23.00		
Schedule 1			23.00		
Hospital—Chapman		66.00	66.00		
" Clephane		53.00	53.00		
" General		78.00	78.00		
" Hirsh		2,035.23	2,035.23		
" Houser		134.00	134.00		
" Kauffman		53.00	53.00		
" Kimmel		165.00	165.00		
" Kuhlbank		92.00		92.00	
" Maloney		242.00	242.00		
" National Park Seminary		27.00	27.00		
" Patient Aid		4,389.00	4,389.00		
" Reinhardt		27.00	27.00		
" Strong		805.00	805.00		
" Tree		536.00	536.00		
" Woodbury		536.00	536.00		
Schedule 1			9,146.23		

INVESTMENT INCOME (Continued)

For the Year Ended August 31, 1958

Funds	Balance August 31, 1957	Net Income	Disbursements		Balance August 31, 1958
			Current Operations	Added to Principal	
ENDOWMENT FUNDS (Continued) (Schedule 12)					
Designated (Continued)					
Scholarship—Andrews	560.58	268.02	300.00		528.60
" Bartsch	680.00	1,075.00	680.00		
" Transferred to Bartsch-Dunne Fund				395.00	680.00
" Bradley	329.00	148.00	200.00		277.00
" Carr	4,492.00	2,607.00	3,400.00		3,699.00
" Carter, H. H.	1,756.00	268.00	500.00		1,524.00
" Carter, M. M.	141.00	53.00	100.00		94.00
" Columbian Women Funds					
" Brown	72.00	64.00	72.00		64.00
" Chamberlin	137.00	123.00	137.00		123.00
" College Women's	30.00	27.00	30.00		27.00
" Founders of Columbian Women	298.00	268.00	298.00		268.00
" Hardy Foundation	46.00	83.00	46.00		83.00
" Herron	298.00	268.00	298.00		268.00
" Knapp	298.00	268.00	314.00		252.00
" McWilliam	60.00	53.00	60.00		53.00
" Wilson	60.00	53.00	60.00		53.00

“	Davis	96.00	53.00	80.00	....	69.00
“	D. C.—D. A. R.	629.00	441.00	450.00	....	620.00
“	Dorsey	1,818.00	725.28	560.00	5.28	1,978.00
“	Drane	....	207.00	....	....	207.00
“	Erwin	490.00	268.00	300.00	....	458.00
“	Farnham	249.00	53.00	50.00	....	252.00
“	Fisher	122.00	53.00	....	....	175.00
“	Hampel	73.00	27.00	40.00	....	60.00
“	Harvey	252.88	211.97	200.00	....	264.85
“	Hazelton	505.00	268.00	350.00	....	423.00
“	Kendall	356.00	320.00	356.00	....	320.00
“	Morehouse	151.00	80.00	125.00	....	106.00
“	Pearson	395.00	152.00	....	....	547.00
“	Phi Delta Delta Fraternity	11.00	40.00	....	....	51.00
“	Powell	29,389.00	2,682.00	....	....	32,071.00
“	Shepard	1,027.00	536.00	750.00	....	813.00
“	Spencer	311.86	145.20	175.00	....	282.06
“	Stone	584.00	107.00	200.00	....	491.00
“	Swisher	700.00	796.00	700.00	96.00	700.00
“	Walker	483.00	134.00	300.00	....	317.00
“	Withington	199.00	105.00	150.00	....	154.00
“	Woodhull	100.00	32.00	40.00	....	92.00
	SCHOLARSHIPS AWARDED	....	....	11,321.00		

INVESTMENT INCOME (Continued)

For the Year Ended August 31, 1958

FUNDS	Balance August 31, 1957	Net Income	Disbursements		Balance August 31, 1958
			Current Operations	Added to Principal	
ENDOWMENT FUNDS (Continued) (Schedule 12)					
DESIGNATED (Continued)					
Prize—Burns	97.00	53.00	65.00	....	85.00
" Cowles	221.00	161.00	150.00	....	232.00
" Croissant	86.00	53.00	50.00	....	89.00
" Cutter	91.00	53.00	60.00	....	84.00
" Davis	112.00	38.00	....	....	150.00
" Essary	421.00	161.00	200.00	....	382.00
" Evans	64.00	80.00	75.00	....	69.00
" Fitch	209.00	53.00	75.00	....	187.00
" Glover	22.00	79.75	42.75	....	59.00
" Goddard	483.00	296.00	300.00	....	479.00
" Hubbard	145.00	53.00	60.00	....	138.00
" Kappa Beta Pi Legal Sorority	....	7.00	....	....	7.00
" Larner	210.00	42.69	25.69	....	227.00
" Mahler	15.00	5.00	2.00	....	18.00
" Ordronaux	495.00	268.00	450.00	....	313.00
" Ruggles	101.00	27.00	35.00	....	93.00
" Staughton-Elton	151.00	27.00	30.00	....	148.00
" Sterrett	28.00	15.50	13.50	....	30.00
" Swisher	446.00	53.00	100.00	....	399.00
" Walsh	466.00	53.00	150.00	....	369.00
" Weddell	669.00	268.00	350.00	....	587.00
PRIZES AWARDED	....	....	2,233.94		

Library Books—Gladstone	*54.00*	*9.00*			*63.00*
" " *Hensey-Troutman*	39.00	23.00			62.00
" " Howard	3,740.00	536.00	232.35		4,043.65
" " Meyer	471.00	53.00			524.00
" " Noyes	3,392.00	536.00			3,928.00
" " Swisher	1,336.00	114.00		9.00	1,441.00
Exhibit G			232.35		
DESIGNATED CURRENT FUNDS (Schedule 10B)					
Commonwealth		15,007.50		15,007.50	
Freed Foundation	3.34	40.00		40.00	3.34
Patent, Trademark and Copyright Foundation		1,041.35		1,041.35	
PLANT FUNDS (Schedule 13)					
Field House		18.00		18.00	
Law Center		3,675.58		3,675.58	
Pairo (income use for athletics)		3,334.33	3,334.33		
School of Medicine Building		112.00		112.00	
Women's Activities Building		90.55		90.55	
Schedule 1			3,334.33		
TOTALS—DESIGNATED INCOME—EXHIBIT D	103,868.66	311,221.34	288,188.84	23,947.66	102,953.50
TOTALS—INVESTMENT INCOME	103,868.66	353,546.13	330,513.63	23,947.66	102,953.50

DESIGNATED CURRENT FUNDS—MISCELLANEOUS

For the Year Ended August 31, 1958

Funds	Balance August 31, 1957	Additions		Deductions		Balance August 31, 1958
		Gifts	Other			
Scholarships, Fellowships						
Alexandria Women's Club	84.50			Scholarships	70.10	14.40
Alpha Zeta Omega Pharmaceutical Fraternity	519.50	500.00		"	500.00	519.50
American Foreign Service Association	31.00	500.00		"	531.00	
American Foundation Pharmaceutical Education						
Scholarship		400.00		"	400.00	
Fellowship		1,666.67		Fellowship	1,666.67	
American Society of Women Accountants	100.00	100.00		Scholarships	100.00	100.00
Babione		120.00				120.00
Chicago Congregational Association		300.00		"	227.00	73.00
Clausey Foundation	320.00	(−320.00)				
Columbian Women	10.00			"	10.00	
Crown Photo Service		500.00				500.00
D. C. Pharmaceutical Association	500.00	500.00		"	458.67	541.33
District H Virginia Educational Association		300.00		"	300.00	
Firestone Tire and Rubber Co.	18.18	1,245.91		"	1,230.20	33.89
General Motors Corp.		4,200.00		"	4,200.00	
Georgetown Business and Professional Women		100.00				100.00
Harold's Club		1,000.00		"	1,000.00	
Hazelton Laboratories		500.00		"	500.00	
Kappa Alpha Theta Sorority		500.00		"	500.00	
Kappa Delta Northern Virginia Alumnae		100.00		"	100.00	
Kappa Psi Fraternity	75.00	75.00				150.00
Kiwanis Club of Santa Fe		200.00		"	200.00	
Lederle Laboratories	1,600.00	1,200.00		"	2,200.00	600.00
Lions Club, Plainville, Conn.		100.00		"	100.00	
Meyer Foundation	3,500.00	3,500.00		"	3,500.00	3,500.00
Milbank, Thomas F.	724.00			"	567.00	157.00
National Ass'n of Secondary School Principals		500.00		"	500.00	
Noyes Foundation		350.00		"	350.00	

Phi Delta Gamma Sorority	*100.00*	*100.00*		"	*100.00*	*100.00*
President's	*1,500.00*	*1,000.00*		"	*500.00*	*2,000.00*
Roberts, Eugenia Bradford		*350.00*		"	*350.00*	
Scottish Rite—Baltimore		1,800.00				1,800.00
" " Florida		1,800.00				1,800.00
" " Louisiana		6,315.34		"	6,295.34	20.00
" " Texas		1,800.00				1,800.00
Shades Valley High P. T. A.	72.66	(−72.66)				
Texas Co.	776.08	1,710.61		"	2,486.69	
Tobacco Industry Research Committee	1,000.00	500.00		"	1,000.00	500.00
Vaughan-Evans Post		300.00		"	300.00	
Washington and Lee High School	114.00			"	114.00	
Winslow Foundation		1,425.00		"	1,425.00	
Wolcott Foundation		2,019.00		"	2,019.00	
Women's Club, Plainville, N. J.		300.00		"	300.00	
World University Service		3,300.00		"	3,300.00	
Zonta Club		300.00		"	300.00	
Prize						
Alpha Zeta Omega Pharmaceutical Auxiliary	37.50	50.00		Prize	22.50	65.00
Cannon, Martin L.	25.60			"	22.50	3.10
Chi Omega Sorority		25.00		"	25.00	
Delta Zeta Sorority		10.00		"	10.00	
Freed Foundation	1,000.00					1,000.00
Investment Income			40.00	"	40.00	
Glover	17.25			"	17.25	
Kappa Kappa Gamma Sorority		10.00		"	10.00	
Lawson		100.00		"	100.00	
Neviaser, Julius		100.00		"	100.00	
Psi Chi Sorority		50.00		"	50.00	
Sigma Kappa Sorority		10.00		"	10.00	
Student Art Show		100.00		"	100.00	
Zeta Tau Alpha Sorority		25.00		"	25.00	

DESIGNATED CURRENT FUNDS—MISCELLANEOUS (Continued)

For the Year Ended August 31, 1958

Funds	Balance August 31, 1957	Additions		Deductions		Balance August 31, 1958
		Gifts	Other			
Columbian College						
Milbank Foundation—Religion	2,500.00	10,000.00		To Schedule 1	10,000.00	2,500.00
National Science Foundation—Chemistry		3,630.00				3,630.00
Texas Co.—Political Science		100.00		To Schedule 1	100.00	
Hospital						
Multiple Sclerosis Association		3,500.00				3,500.00
Multiple Sclerosis Society Patient Hospitalization		1,500.00				1,500.00
Multiple Sclerosis Society Physiotherapy		2,500.00				2,500.00
Nat'l Found. Infantile Paralysis—Polio Center		39,178.57		To Schedule 1	7,093.09	32,085.48
Law School						
Food Law Institute		1,000.00		To Schedule 1	1,000.00	
Patent, Trademark and Copyright Foundation	50,489.98	48,430.24		To Schedule 1	64,395.76	
Investment Income			1,041.35			35,565.81
Commerce Department	2,926.88			To Schedule 1	2,926.88	
Kettering Foundation		15,000.00		To Schedule 1	15,000.00	
Sloan Foundation		10,000.00		To Schedule 1	2,488.45	7,511.55
Washington Foreign Law Society Publications	183.00	55.50		To Schedule 1	70.90	167.60
Library						
Art Maintenance		100.00		To Schedule 1	100.00	
Bruce Buttles		15.00		To Schedule 1	15.00	
Class of 1957		229.61		To Schedule 1	229.61	
Music Room	384.40					384.40
School of Engineering						
Texas Co.—Electrical		100.00		To Schedule 1	100.00	
School of Government						

American Medical Education Foundation		5,900.00		To Schedule 1...	5,900.00	
Arthritis and Rheumatism Foundation		2,045.00				2,045.00
Commonwealth	470,240.99			To Schedule 1...	95,679.56	
Investment Income			15,007.50			389,568.93
Decker Corp.		6,000.00		To Schedule 1...	1,000.00	5,000.00
Dermatology and Syphilology	5,778.24	586.48				6,364.72
Flint—Physiology	21,441.00	13,693.75		To Schedule 1...	12,094.00	23,040.75
National Fund for Medical Education		39,180.00		To Schedule 1...	39,180.00	
Neurology, Education, Research	600.00	1,400.00		To Schedule 1...	2,000.00	
Obstetrics and Gynecology—Film	517.37	276.46				793.83
Pathology Department		175.00		To Schedule 1...	175.00	
Post-Graduate Medical Education	28,392.42		17.50			28,409.92
Surgery, Education, Research	6,960.24	1,574.50		To Schedule 1...	4,741.76	3,792.98
Wyeth Laboratories		5,000.00				5,000.00
School of Pharmacy						
D. C. Pharmaceutical Association—Equipment	1,760.88			To Schedule 1...	52.50	1,708.38
Special Gifts—Equipment	30.23	50.00		To Schedule 1...	26.93	53.30
Miscellaneous						
General Alumni Association		39,197.39		To Schedule 1...	31,397.23	
" " "				To Schedule 12..	135.00	
" " "				To Schedule 13...	7,665.16	
Hospital House Staff	4,813.70		967.78			5,781.48
Key Deposits	506.50		27.00			533.50
Speech Clinic Foundation	241.74	500.00		Expense	537.75	203.99
Totals—Exhibit D	610,292.84	292,702.37	17,101.13		342,557.50	577,538.84

DESIGNATED CURRENT FUNDS—AGENCY

For the Year Ended August 31, 1958

Funds	Balance August 31, 1957	Deposits	Withdrawals	Balance August 31, 1958
Davis-Hodgkins House	14.14			14.14
Flowers	76.85		10.00	66.85
R.O.T.C.	42.86	48.00	90.86	
Women's Board of the Hospital				
Women's Board Courier	364.18	6,018.25	6,202.84	179.59
Women's Board Gift Shop	9,039.81	42,601.73	48,343.65	3,297.89
Women's Board Memorial	200.00			200.00
Totals—Exhibit D	9,737.84	48,667.98	54,647.35	3,758.47

CHANGES IN PRINCIPAL OF LOAN FUNDS

For the Year Ended August 31, 1958

FUNDS	Balance August 31, 1957	Additions		Collected for U. S. Government	Balance August 31, 1958
		Gifts	Interest on Loans		
Himes	11,410.96	5,829.94	17.12		17,258.02
Home Economics	382.35				382.35
Kellogg	19,988.03	20.00	452.58		20,460.61
Law Association	1,881.46		63.52		1,944.98
Pfizer	1,031.33		15.28		1,046.61
Schoenfeld	1,981.74		22.26		2,004.00
School of Medicine	9,513.75	3,121.05	32.82		12,667.62
Sutherland	1,453.10		155.21		1,608.31
University	9,033.83		170.01		9,203.84
War	4,620.37			4,620.37	
TOTALS—EXHIBIT E	61,296.92	8,970.99	928.80	4,620.37	66,576.34

SCHEDULE 11

CHANGES IN PRINCIPAL OF ENDOWMENT FUNDS

For the Year Ended August 31, 1958

Funds	Balance August 31, 1957	Additions			Deductions	Balance August 31, 1958
		Gifts	Investment Income	Other		
UNRESTRICTED						
Acker	300.00					300.00
Alumni	732.00					732.00
American Airlines	1,000.00					1,000.00
Bragg	250.00					250.00
Campaign	186,750.00					186,750.00
Coope	22,461.97					22,461.97
Corcoran	220,160.00					220,160.00
Davis	41,890.00					41,890.00
Dulac	1,000.00					1,000.00
Durst	2,000.00					2,000.00
Goddard	33,610.00					33,610.00
Haggett	1,000.00					1,000.00
King	19,220.00					19,220.00
Poole	1,000.00					1,000.00
Reichelderfer	15,000.00					15,000.00
River Raisin	1,000.00					1,000.00
Sanders	2,110.00					2,110.00
Sothern	5,000.00					5,000.00
Subscription Gifts	12,530.00					12,530.00
Syms	1,500.00					1,500.00
Teller	136,980.00					136,980.00
Trustees	1,570.00					1,570.00
Walsh	100.00					100.00
Weddell	10,000.00					10,000.00
Willard Association	1,000.00					1,000.00
Withers	26,900.00					26,900.00
Woodhull	50,000.00					50,000.00

Fellowship						
King	75,330.00					75,330.00
Miller	55,310.00					55,310.00
Sanders	210,404.46					
Net loss on sale of investments					457.22	209,947.24
Professorship						
Alumni	830.00					830.00
Carroll	500.00					500.00
Congressional	158,710.00					158,710.00
Depew	170,600.00					170,600.00
Elton	14,510.00					14,510.00
Ford Foundation	776,000.00					776,000.00
Fry	42,918.00		1,470.00			44,388.00
Fry (controlled by National Savings and Trust Co.)	106,067.98					
Net gain on sale of assets				9,196.95		115,264.93
Tompkins		5,000.00	103.00			5,103.00
Yulee	5,000.00					5,000.00
Library						
Gladstone	175.00					175.00
Green		20,000.00				20,000.00
Hensey-Troutman	500.00					500.00
Howard	10,000.00					10,000.00
Meyer	1,000.00					1,000.00
Noyes	10,000.00					10,000.00
Swisher	2,121.00		9.00			2,130.00

CHANGES IN PRINCIPAL OF ENDOWMENT FUNDS (Continued)

For the Year Ended August 31, 1958

Funds	Balance August 31, 1957	Additions			Deductions	Balance August 31, 1958
		Gifts	Investment Income	Other		
RESTRICTED (Continued)						
Columbian College—Burton		3,040.00				
Transferred from Burton Hospital Fund				9,500.00		12,540.00
Law School—Altizer	1,000.00					1,000.00
" " Cummings	15,060.56	81,384.63	4.81			96,450.00
School of Engineering—Howard	3,620.00					3,620.00
" " " School of Engineering	800.00					800.00
School of Government—Rankin	279,710.00					279,710.00
" " " Scottish Rite	1,000,000.00					1,000,000.00
School of Medicine						
Bartsch-Dunne	4,547.00					
Income of Bartsch Scholarship Fund			395.00			4,942.00
Borden	3,710.00					3,710.00
Collins	2,830.00					2,830.00
Cooper	10,000.00					10,000.00
Cummings	10,000.00					10,000.00
Eppley	1,000.00					1,000.00
Ford Foundation	2,000,000.00					2,000,000.00
Gardner	4,490.00					4,490.00
Lewis	44,380.00					44,380.00
Meyer	295,367.26	7,038.15	.59			302,406.00
Ruffin	57,490.00					57,490.00
School of Medicine	13,961.00	1,075.00				15,036.00
Sharpe	8,216.79					8,216.79
Tompkins		3,596.22				3,596.22

School of Pharmacy—Gibbs	*10,000.00*					*10,000.00*
Hospital						
Burton	9,500.00					
Transferred to Columbian College Fund					9,500.00	
Chapman	1,230.00					1,230.00
Clephane	1,000.00					1,000.00
General	1,445.00	25.00				1,470.00
Hirsh	37,440.00	200.00				37,640.00
Houser	2,500.00					2,500.00
Kauffman	1,000.00					1,000.00
Kimmel	3,080.00					3,080.00
Kuhlbank	1,732.00		92.00			1,824.00
Maloney	5,000.00					5,000.00
National Park Seminary	500.00					500.00
Patient Aid	106,170.00					106,170.00
Reinhardt	500.00					500.00
Strong	15,000.00					15,000.00
Tree	10,000.00					10,000.00
Woodbury	10,000.00					10,000.00
Hospital Equipment						
Marvin, Dorothy Betts (formerly Women's Board)	36,519.40	11,461.18	1,787.00			
Transferred from Plant Funds—Schedule 13				237.42		50,005.00
Cancer Clinic						
Cancer Clinic	557.00	10.00				567.00
Sanders, Beatrice	29,151.03					
Temporary fund discontinued					29,151.03	

CHANGES IN PRINCIPAL OF ENDOWMENT FUNDS (Continued)

For the Year Ended August 31, 1958

Funds	Balance August 31, 1957	Additions			Deductions	Balance August 31, 1958
		Gifts	Investment Income	Other		
RESTRICTED (Continued)						
Scholarship						
Andrews	5,194.95					5,194.95
Bartsch	20,040.00					20,040.00
Bradley	2,760.00					2,760.00
Carr	48,610.00					48,610.00
Carter, H. H.	5,000.00					5,000.00
Carter, M. M.	1,000.00					1,000.00
Columbian Women Funds						
Brown	1,200.00					1,200.00
Chamberlin	2,300.00					2,300.00
College Women's	500.00					500.00
Founders of Columbian Women	5,000.00					5,000.00
Hardy Foundation	2,000.00					2,000.00
Herron	5,000.00					5,000.00
Knapp	5,000.00					5,000.00
McWilliam	1,000.00					1,000.00
Wilson	1,000.00					1,000.00

Davis	1,000.00					1,000.00
D. C.—D. A. R.	8,230.00					8,230.00
Dorsey	12,940.00	1,524.72	5.28			14,470.00
Drane	5,000.00					5,000.00
Erwin	5,000.00					5,000.00
Farnham	1,000.00					1,000.00
Fisher	1,000.00					1,000.00
Hampel	500.00					500.00
Harvey	4,650.63					4,650.63
Hazelton	5,000.00					5,000.00
Kendall	5,960.00					5,960.00
Morehouse	1,500.00					1,500.00
Pearson	2,840.00					2,840.00
Phi Delta Delta Fraternity	1,000.00					1,000.00
Powell	50,000.00					50,000.00
Shepard	10,000.00					10,000.00
Spencer	7,422.20					7,422.20
Stone	2,000.00					2,000.00
Swisher	15,193.00		96.00			15,289.00
Walker	2,500.00					2,500.00
Withington	1,960.00					1,960.00
Woodhull	600.00					600.00

CHANGES IN PRINCIPAL OF ENDOWMENT FUNDS (Continued)

For the Year Ended August 31, 1958

Funds	Balance August 31, 1957	Additions			Deductions	Balance August 31, 1958
		Gifts	Investment Income	Other		
RESTRICTED (Continued)						
Prize						
Burns	1,000.00					1,000.00
Cowles	3,000.00					3,000.00
Croissant	1,000.00					1,000.00
Cutter	1,000.00					1,000.00
Davis	700.00					700.00
Essary	3,000.00					3,000.00
Evans	1,500.00	100.00				1,600.00
Fitch	1,000.00					1,000.00
Glover	2,000.00					2,000.00
Goddard	5,520.00					5,520.00
Hubbard	1,000.00					1,000.00
Kappa Beta Pi Legal Sorority		350.00				350.00
Larner	800.00					800.00
Mahler	100.00					100.00
Ordronaux	5,000.00					5,000.00
Ruggles	500.00					500.00
Staughton-Elton	500.00					500.00
Sterrett	300.00					300.00
Swisher	1,000.00					1,000.00
Walsh	1,000.00					1,000.00
Weddell	5,000.00					5,000.00

Plant						
Graduate	14,926.00	420.00				15,346.00
National University Library	18,390.00					18,390.00
Schouler National University Library	1,520.00					1,520.00
	6,794,204.23	135,224.90	3,962.68	18,934.37	39,108.25	6,913,217.93
RESERVES FOR PROTECTION OF INVESTMENTS						
Consolidated Endowment Funds	100,117.74					
Net gain on sale of investments				2,325.96		102,443.70
Scottish Rite Fund	62,798.80					
Loss on sale of investments					62.50	62,736.30
TOTALS—EXHIBIT F	6,957,120.77	135,224.90	3,962.68	21,260.33	39,170.75	7,078,397.93

CHANGES IN PRINCIPAL OF PLANT FUNDS

For the Year Ended August 31, 1958

Funds	Balance August 31, 1957	Additions			Deductions		Balance August 31, 1958
		Gifts	Investment Income	Other	Plant	Other	
Cancer Clinic Equipment							
Beta Gamma Phi Sorority	437.31						437.31
Special	2,379.34	1,725.50			1,232.14		2,872.70
Zito	406.79						406.79
Field House	1,240.00	589.00	18.00				1,847.00
Ford Foundation Hospital Building	231,219.05		8,499.31				239,718.36
Hospital Equipment							
Cardiovascular	19.91	1,697.00			1,716.91		
General		6,582.50			6,582.50		
Multiple Sclerosis	44.00						44.00
Obstetrics and Gynecology O. P. Clinic	915.79	662.81			375.80		1,202.80
Physical Medicine	184.02						184.02
Prenatal Nursery	102.91						102.91
Wolfe Ophthalmology		30,731.43			723.38		30,008.05
Women's Board Gift Shop	237.42						
Transferred to Schedule 12						237.42	
Law Center	130,095.72	17,415.49	3,675.58		3,334.34		
Transferred to Schedule 1						2,025.60	145,826.85

Library Books							
American Diplomatic History	46.00				46.00		
Brooklyn Alumni Club	430.50						430.50
Chase, Ruth Judith	50.00				50.00		
Class of 1945	58.75				58.75		
Council of Religious Organizations	310.56				65.12		245.44
George, Carlotta		15.00			15.00		
Hellenic Society	225.00						225.00
Merrill Lynch, Pierce, Fenner and Beane	970.34	250.00			55.59		1,164.75
Noyes, Theodore W.	2,364.60				1,130.00		1,234.60
Phi Alpha Delta Fraternity	19.61	10.00			19.61		10.00
Rosen	127.47						127.47
Marion M. Bond and Mary A. Wood Memorial	2,000.00	10.00					2,010.00
Pairo	101,568.41				27,791.93		
Gain on sale of investments				21.60			73,798.08
School of Engineering Building		319.00			319.00		
School of Engineering Equipment		1,033.00			1,033.00		
School of Medicine Building	7,686.50	(−2,514.50)	112.00				5,284.00
Women's Activities Building	6,263.90	115.00	90.55				6,469.45
TOTALS—EXHIBIT G	489,403.90	58,641.23	12,395.44	21.60	44,549.07	2,263.02	513,650.08

SCHEDULE 13

GIFTS AND GRANTS

For the Year Ended August 31, 1958

CURRENT FUNDS			
Unrestricted—Exhibit C			
Bequest of Susan Whitney Dimock		1.00	
Unrestricted—Schedule 1			
American College Fund	652.57		
Bequest of Susan Whitney Dimock	63.46		
Equitable Life Assurance Society	1,000.00		
Esso Foundation	3,500.00		
First National City Bank of New York	660.00		
General Alumni Association	13,489.23		
General Motors Corporation	2,446.00		
Household Finance Corporation	350.00		
Johnson Foundation	500.00		
Johns Manville Co.	1,000.00		
Kaiser Aluminum and Chemical Co.	2,000.00		
Life Underwriters Training Council	200.00		
Macke Corporation	250.00		
Radio Corporation of America	200.00		
Rockefeller Foundation	1,000.00		
Texas Co.	2,065.47		
Time, Inc.	493.00		
United States Steel Foundation	2,000.00		
Wright, Matilda D.	1,500.00	33,369.73	33,370.73
Designated—Hospital—Schedule 1			
Cancer Clinic	9,087.05		
Hospital	12,965.18	22,052.23	
Designated—Sponsored Research—Schedule 10		3,935,476.46	

Prize—various donors	*450.00*		
Columbian College—Religion—Milbank Foundation	*10,000.00*		
" " Chemistry—National Science Foundation	*3,630.00*		
" " Political Science—Texas Co.	*100.00*		
Hospital—Multiple Sclerosis Association	*3,500.00*		
" Multiple Sclerosis Society Patient Hospitalization	1,500.00		
" Multiple Sclerosis Society Physiotherapy	2,500.00		
" National Foundation Infantile Paralysis—Polio Center	39,178.57		
Law School—Food Law Institute	1,000.00		
" " Patent, Trademark and Copyright Foundation	48,430.24		
" " " " " " " Kettering Foundation	15,000.00		
" " " " " " " Sloan Foundation	10,000.00		
" " Washington Foreign Law Society Publications	55.50		
Library—Art Maintenance—various donors	100.00		
" Bruce Buttles	15.00		
" Class of 1957	229.61		
School of Engineering—Electrical—Texas Co.	100.00		
School of Government—Kenneth Kahn	20.00		
School of Medicine—American National Education Foundation	5,900.00		
" " " Arthritis and Rheumatism Foundation	2,045.00		
" " " Decker Corporation	6,000.00		
" " " Dermatology—Dr. H. Ford Anderson	586.48		
" " " Physiology—Mrs. Robert B. Flint	13,693.75		
" " " National Fund for Medical Education	39,180.00		
" " " Neurology, Education, Research—various donors	1,400.00		
" " " Obstetrics and Gynecology—Film—Association of American Medical Colleges	276.46		
" " " Pathology—Dr. Charles Barnett	150.00		
" " " " Dr. J. L. Orbison	25.00		
" " " Surgery, Education, Research—various donors	1,574.50		
" " " Wyeth Laboratories	5,000.00		
School of Pharmacy—various donors	50.00		
Speech Department—Speech Clinic Foundation	500.00		
General Alumni Association—various donors	39,197.39		
	292,702.37		
" " " transferred to specified funds	39,197.39	253,504.98	4,211,033.67

GIFTS AND GRANTS (Continued)

For the Year Ended August 31, 1958

LOAN FUNDS (Schedule 11)			
Himes Loan Fund—Joseph H. Himes		5,829.94	
Kellogg Loan Fund—John Fenick		20.00	
School of Medicine Loan Fund—Joseph H. King	1,500.00		
" " " " " Dr. Bloedorn dinner and portrait fund	421.03		
" " " " " Morris H. Goldenberg	100.00		
" " " " " Class of 1958	55.22		
" " " " " G. W. U. Faculty Women's Club	10.00		
" " " " " Dr. Winfred Overholser	5.00		
" " " " " various donors	1,029.80	3,121.05	8,970.99
ENDOWMENT FUNDS (Schedule 12)			
RESTRICTED			
Professorship—Tompkins Fund—Chas. H. Tompkins Co.		5,000.00	
Library—Green Fund—William Green Memorial Fund Committee		20,000.00	
Columbian College—Burton Fund—Grace C. Burton		3,040.00	
Law School—Cummings Fund—Bequest of Homer S. Cummings		81,384.63	
School of Medicine—Meyer Fund—various donors		7,038.15	
" " " School of Medicine Fund—various donors		1,075.00	
" " " Tompkins Fund—various donors		3,596.22	
Hospital—General Fund—various donors		25.00	
" Hirsh Fund—Bequest of Bella Hirsh		200.00	
" Marvin, Dorothy Betts, Fund—Women's Board Gift Shop	11,456.18		
" " " " " Charles D. Humbred	5.00	11,461.18	
Cancer Clinic—Cancer Clinic Fund—Helen B. Lawrence		10.00	
Scholarship—Dorsey Fund—Harryman Dorsey	1,515.32		
" " " Helen Newman	9.40	1,524.72	
Prize—Evan's Fund—General Alumni Association		100.00	
" Kappa Beta Pi Legal Sorority Fund		350.00	
Plant—Graduate Fund—various donors		420.00	135,224.90

Cancer Clinic Equipment Fund—Special—various donors			*1,725.50*
Field House Fund—General Alumni Association			*589.00*
Hospital Equipment Fund—Cardiovascular—various donors			1,697.00
" " " General—National Foundation Infantile Paralysis	5,825.00		
" " " " W. R. Winslow	525.50		
" " " " G. W. U. Hospital Wives Group	232.00	6,582.50	
" " " Obstetrics and Gynecology Out-Patient Clinic			
" " " Tucker Anthony and R. L. Day	527.81		
" " " Arthur Gunn	75.00		
" " " T. R. Lyons	60.00	662.81	
" " " Wolfe Ophthalmology—Salina Wolfe			30,731.43
Law Center Building Fund—General Alumni Association	8,233.66		
" " " " various donors	9,181.83		17,415.49
Library Book Fund—Carlotta George—various donors			15.00
" " " Merrill Lynch, Pierce, Fenner and Beane			250.00
" " " Phi Alpha Delta Fraternity			10.00
Marion M. Bond and Mary A. Wood Memorial—Washington Home for Foundlings			10.00
School of Engineering Building Fund—General Alumni Association	299.00		
" " " " " Dow Chemical Co.	10.00		
" " " " " Otis L. McIntyre	10.00		319.00
School of Engineering Equipment Fund—General Alumni Association			1,033.00
School of Medicine Building Fund—General Alumni Association—adjust 1956-57	(−2,604.50)		
" " " " " Dr. H. Henry Rock	90.00		(−2,514.50)
Women's Activities Building Association—General Alumni Association			115.00
			58,641.23
TOTAL			4,447,241.52

DESCRIPTION OF LOAN FUNDS

August 31, 1958

Himes Loan Fund—Created in 1957 by Joseph H. Himes to be loaned to students of the School of Medicine	17,258.02
Home Economics Loan Fund—Created in 1940 by the D. C. Home Economics Association to be loaned to senior girls majoring in home economics	382.35
Kellogg Loan Fund—Created in 1942 by the W. K. Kellogg Foundation to be loaned to students of the School of Medicine	20,460.61
Law Association Loan Fund—Created in 1941 by the George Washington Law Association to be loaned to students of the Law School	1,944.98
Pfizer Loan Fund—Created in 1953 by Chas. Pfizer and Co., Inc., to be loaned to students of the School of Medicine	1,046.61
Schoenfeld Loan Fund—Created in 1953 by various donors as a memorial to Benjamin Schoenfeld, to be loaned to students in the School of Pharmacy	2,004.00
School of Medicine Loan Fund—Created in 1952 by School of Medicine students to be loaned to students of the School of Medicine	12,667.62
Sutherland Loan Fund—Created in 1941 by Rose L. Sutherland and other donors, to be loaned to students of the School of Medicine	1,608.31
University Loan Fund—Created in 1928 by the University to make short time loans for educational purposes	9,203.84

UNRESTRICTED FUNDS

Acker Fund—Bequest of George N. Acker, M.D., received in 1924, the income to be used as required	300.00
Alumni Endowment Fund—Created by the Class of 1920, to be added to by succeeding graduates, the income to be used as required	732.00
American Airlines Fund—Created in 1957 by American Airlines, Inc., the income to be used as required	1,000.00
Bragg Fund—Created in 1955 by James Elton Bragg, the income to be used as required	250.00
Campaign Fund—Created in 1923 by various donors, the income to be used as required	186,750.00
Coope Fund—Bequest of Jessie Coope, A.B. in Education 1930, received in 1956, in memory of her brother, Lieutenant Colonel Harry Coope, the income to be used as required	22,461.97
Corcoran Fund—Gifts of William W. Corcoran and other donors between the years 1871–86, the income to be used as required	220,160.00
Davis Fund—Bequest of Harry C. Davis, received in 1946, the income to be used as required	41,890.00
Dulac Fund—Bequest of Victor Dulac, received in 1955, the income to be used as required	1,000.00
Durst Fund—Created in 1953 by Dr. Sidney C. Durst in memory of his wife, Clara Saunders Durst, the income to be used as required	2,000.00
Goddard Endowment Fund—Bequest of Frederick J. Goddard, received in 1949, the income to be used as required	33,610.00
Haggett Fund—Created in 1941 by Isabelle Barnes Haggett, the income to be used as required	1,000.00
King, W. B., Fund—Created in 1941 by William B. King, the income to be used as required	19,220.00
Poole Fund—Bequest of George Poole in 1951, the income to be used as required	1,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1958

UNRESTRICTED FUNDS (Continued)

Reichelderfer Fund—Created by Mary M. Reichelderfer in 1945 in memory of her husband, Luther H. Reichelderfer, the income to be used as required	15,000.00
River Raisin Foundation Fund—Created in 1955 by the River Raisin Foundation, the income to be used as required	1,000.00
Sanders Endowment Fund—Created by J. Sanders in 1945, the income to be used as required	2,110.00
Sothern Fund—Bequest of Julia Marlowe Sothern, received in 1951, the income to be used as required	5,000.00
Subscription Gifts Fund—Created by various donors during the years 1845–51, the income to be used as required.	12,530.00
Syms Fund—Bequest of Samuel Syms in 1891, the income to be used as required	1,500.00
Teller Fund—Created in 1949 by bequest of John D. Teller and added to by Mary L. Teller, the income to be used as required	136,980.00
Trustees Fund—Created by the Board of Trustees of the University in 1932, the income to be used as required	1,570.00
Walsh Fund—Created in 1954 by John E. Walsh, the income to be used as required	100.00
Weddel Fund—Created in 1948 by bequests of Alexander W. Weddell and Virginia Chase Weddell, the income to be used as required	10,000.00
Willard Association Fund—Gift of the Willard Association in 1950, the income to be used as required	1,000.00
Withers Fund—Gifts of John Withers and other donors during the years 1851–70, the income to be used as required.	26,900.00
Woodhull Fund—Bequest of Margaret Willett Woodhull, received in 1946, the income to be used as required	50,000.00

FELLOWSHIP FUNDS

King Fellowship Fund—Created in 1928 by bequest of Isabella Osborn King, the income to be used for a fellowship in biology	75,330.00
Miller Fellowship Fund—Bequest of Robin Miller, received in 1954, the income to be used for fellowships in medicine for study of cardiovascular disease	55,310.00
Sanders Fellowship Fund—Bequest of Addie Sanders in 1928 in memory of her brother, Thomas Bradford Sanders, the income to be used for fellowships in various academic fields of study	209,947.24

PROFESSORSHIP FUNDS

Alumni Professorship Fund—Gifts of various alumni since 1911, the income to be used for an alumni professorship in mathematics	830.00
Carroll Professorship Fund—Created by Mary A. Sharpe in 1928 in memory of Mitchell Carroll, the income to be used for a chair in archeology	500.00
Congressional Professorship Fund—Created in 1832 by gift of the United States of America by Act of Congress, the income to be used for professorships	158,710.00
Depew Course in Public Speaking Fund—Created by May Depew in 1936, the income to be used for a course to be known as the "Chauncey M. Depew Course in Public Speaking"	170,600.00
Elton Professorship Fund—Bequest of Romeo Elton of Exeter, England, in 1872, the income to be used for a professorship to be called the "Elton Professorship of Mental and Moral Philosophy"	14,510.00
Ford Foundation Professorship Fund—Created in 1956 by the Ford Foundation, the income to be used to increase faculty salaries. After ten years, the principal sum may be used for either salary support or any other academic purpose	776,000.00
Fry Professorship Funds—Bequest of Annabel Lee Fry, received in 1945, in memory of her husband, Dr. Henry D. Fry, the income to be used for a professorship in physiology	115,264.93
Created in 1945 from income of the original fund, the income of the two funds to be used for a professorship in physiology	44,388.00
Tompkins Professorship Fund—Created in 1958 by gift of Chas. H. Tompkins Co., the income to be added to principal until principal is large enough to support a professorship to be known as the Chas. H. Tompkins Professorship in Civil Engineering	5,103.00
Yulee Professorship Fund—Bequest of Nannie Yulee Noble in 1929 in memory of her mother, Nancy Yulee, the income to be used for lectures in home economics	5,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1958

SCHOOL FUNDS

Columbian College	
Burton Fund—Created in 1957 by gift of Grace C. Burton, the income to be used for Columbian College	12,540.00
Engineering	
Howard Lecture Fund—Created in 1952 by Frank A. Howard, the income to be used for lectures on engineering	3,620.00
School of Engineering Fund—Created in 1954, the income to be used for the School of Engineering	800.00
Government	
Rankin Fund—Bequest of John O. Rankin, received in 1951, the income to be used for the School of Government	279,710.00
Scottish Rite Fund—Created in 1928 by the Supreme Council of the Ancient and Accepted Scottish Rite of Freemasonry of the Southern Jurisdiction of the United States of America, as a permanent memorial to George Washington, The Mason, the income to be used to maintain a School of Government	1,000,000.00
Law	
Altizer Fund—Gift of Bertha E. M. Altizer in 1954, in memory of P. J. Altizer, the income to be used for the Law School	1,000.00
Cummings Fund—Bequest of Homer S. Cummings in 1957, in memory of Julia M. Cummings, the income to be used for the Law School	96,450.00
Medical	
Bartsch-Dunne Research Fund—Created in 1952 by Dr. Anna Bartsch-Dunne from income of the Bartsch Scholarship Fund, the income to be used for research in medicine	4,942.00
Borden Medical Fund—Created in 1936 by Dr. Daniel L. Borden and Jennie Ella Borden, in memory of William C. Borden, the income to be used for the School of Medicine	3,710.00
Collins Memorial Research Fund—Created in 1946 by various donors in memory of Dr. James Lloyd Collins, the income to be used for special research in surgery	2,830.00

Cooper Medical Research Fund—Bequest of Eleanor J. Cooper in 1905, on certain terms since modified by the Supreme Court of D. C. as follows: the income to be used toward the establishment and maintenance, in connection with the Medical Department of the University, of a Research Laboratory, the work of this laboratory to be devoted to the investigation of the nature, causation, prevention, and cure of malaria and other infectious and contagious diseases	10,000.00
Cummings Fund—Bequest of Julia M. Cummings in 1955 in memory of Cecilia Cummings, the income to be used for research and education in cardiovascular and similar diseases	10,000.00
Eppley Medical School Fund—Bequest of Mary V. Eppley in 1951, the income to be used for cancer research in the School of Medicine	1,000.00
Ford Foundation Medical School Fund—Created in 1956 by the Ford Foundation, the income to be used for instruction in the School of Medicine. After ten years, both principal and income may be used for medical education	2,000,000.00
Gardner Medical School Fund—Bequest of William D. Gardner in 1928, the income to be used for the School of Medicine	4,490.00
Lewis Medical School Fund—Bequest of Samuel E. Lewis in 1925, the income to be used for the School of Medicine	44,380.00
Meyer Medical School Fund—Created in 1955 by gifts of various donors, the income to be used for the Eugene Meyer Chair of Medicine	302,406.00
Ruffin Medical School Fund—Bequest of Dr. Sterling Ruffin in 1951, the income to be used for the School of Medicine	57,490.00
School of Medicine Fund—Created in 1940 by various donors, the income to be used for the School of Medicine	15,036.00
Sharpe Medical School Fund—Created by Mary A., Elizabeth M., and Sallie Sharpe in 1924, the income to be used for the School of Medicine	8,216.79
Tompkins, Chas. H., Medical School Memorial Fund—Created in 1958 by gifts of various donors, the income to be used for annual lectures in surgery	3,596.22

PHARMACY

Gibbs Pharmacy Fund—Created by M. G. Gibbs in 1927, the income to be used to aid in establishing and maintaining a commercial pharmacy course in connection with the School of Pharmacy	10,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1958

CANCER CLINIC FUND

Cancer Clinic Fund—Created in 1953 by Mr. and Mrs. V. A. Klein, the income to be used for the Cancer Clinic...	567.00

HOSPITAL FUNDS

Chapman Hospital Fund—Bequest of Mrs. Susanna A. Chapman in 1911, the income to be used for the purposes of the free wards of the hospital	1,230.00
Clephane Hospital Fund—Gift in 1951 of Washington Alumnae of Zeta Tau Alpha Sorority, in memory of Beatrice A. Clephane, the income to be used for the hospital	1,000.00
General Hospital Fund—Created in 1929 by various donors, the income to be used for the hospital	1,470.00
Hirsh Hospital Fund—Bequest of Bella Hirsh in 1955, the income to be used for the hospital	37,640.00
Houser Hospital Fund—Bequest of E. Keller Houser, received in 1944, the income to be used to endow a room in memory of his daughter, Anna Victoria Houser	2,500.00
Kauffman Hospital Fund—Gift of Samuel H. Kauffman in 1954, the income to be used for the hospital	1,000.00
Kimmel Hospital Fund—Bequest of Annie Kimmel, received in 1932, the income to be used for the hospital	3,080.00
Kuhlbank Hospital Fund—Bequest of Freda Kuhlbank, received in 1930, the income to be added to the principal until the principal shall be large enough to maintain a bed in the White Ward of the hospital to be known as the "Freda Kuhlbank Bed"	1,824.00

Maloney Hospital Fund—Created in 1952 by the Maloney Concrete Co., the income to be used for the hospital . . .	5,000.00
National Park Seminary Hospital Fund—Gift of students of National Park Seminary of Forest Glen, Maryland, in 1906, the income to be used toward the maintenance of a bed in the hospital	500.00
Patient Aid Hospital Fund—Created in 1956 by an anonymous donor, the income to be used to provide hospitalization to needy persons suffering from diseases, especially heart disease	106,170.00
Reinhardt Hospital Fund—Bequest of Luisa Wynne Reinhardt in 1922, the income to be used for the hospital	500.00
Strong Hospital Fund—Gift of estate of Hattie M. Strong in 1952 the income to be used for the hospital	15,000.00
Tree Hospital Fund—Created in 1911 by bequest of Lambert M. Tree, in memory of his mother, Mrs. Laura M. Tree, the income to be used to maintain a bed in the hospital, to be known as the "Laura M. Tree Bed"	10,000.00
Woodbury Hospital Fund—Bequest of Ellen DeQ. Woodbury in 1909, the income to be used for the reception and treatment of female patients in the hospital	10,000.00

HOSPITAL EQUIPMENT FUNDS

Marvin, Dorothy Betts, Hospital Equipment Fund—Created in 1954 by the Women's Board of the Hospital, the income to be used for the purchase of equipment	50,005.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1958

PLANT FUNDS

Graduate Endowment Fund—Created by the Class of 1926, to be used for the acquisition of sites, erection of buildings, and maintenance and purchase of equipment. Only the income may be used until Fund reaches $50,000 when income, and principal over $50,000, may be used	15,346.00
National University Library Fund—Created in 1955 by transfer of the assets of National University, the income to be used toward the maintenance and extension of the Law Library	18,390.00
Schouler National University Library Fund—Bequest of James Schouler in 1921 to the National University Law School, the income to be used to purchase books for the Law Library	1,520.00

LIBRARY BOOK FUNDS

Gladstone Library Fund—Gift of Ethel S. Gladstone in 1951, the income to be used to purchase books for the Library	175.00
Green Library Fund—Gift of the William Green Memorial Fund, the income to be used to purchase books in the field of Social Sciences for the Library	20,000.00
Hensey-Troutman Library Fund—Created in 1951 by D. C. Masonic Clubs and added to in 1957 by bequest of Lynn H. Troutman, the income to be used to purchase books for the Library	500.00
Howard Library Fund—Gift of Colonel Deane Childs Howard in 1943 in memory of Captain Deane Childs Howard, Jr., the income to be used to purchase books for the Library	10,000.00
Meyer Library Fund—Gift of Eugene Meyer in 1944, the income to be used to purchase books for the Library	1,000.00
Noyes Library Fund—Bequest of Theodore W. Noyes, received in 1947, the income to be used to purchase books for the Library	10,000.00
Swisher Alcove Book Fund—Gift of Dr. Charles Clinton Swisher in 1941, in trust for the Historical Society of the University, the income to be used to purchase books for the Swisher Alcove in the Library	2,121.00

SCHOLARSHIP FUNDS

Andrews Memorial Scholarship Fund—Gift of Belle Fisk Andrews in 1920 in memory of her husband, Byron Andrews, the income to be used for scholarships "for ambitious and needy students of English, Latin, journalism, history, literature, or political science"	5,194.95
Bartsch Scholarship Fund—Created by Dr. Anna Bartsch-Dunne in 1946, the income to be used for a scholarship for a woman in the School of Medicine and an internship for a woman in the University Hospital	20,040.00
Bradley Scholarship Fund—Bequest of Alice Bradley in 1954 in memory of Everett Lamont Bradley, the income to be used for a scholarship in the School of Medicine	2,760.00
Carr Scholarship Fund—Created by the bequest of Emma K. Carr in 1932, the income to be used for scholarships for young white men	48,610.00
Carter, H. H., Scholarship Fund—Gift of Maria M. Carter in 1896 in memory of her husband, Henry Harding Carter, the income to be used for scholarships in civil engineering	5,000.00
Carter, M. M., Scholarship Fund—Gift of Maria M. Carter in 1871, the income to be used for scholarships for young men	1,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1958

SCHOLARSHIP FUNDS (Continued)

Columbian Women Scholarship Funds

Brown Scholarship Fund—Created by the College Women's Club of Washington, D. C., in 1925, in memory of Elizabeth V. Brown, the income to be used for scholarships in the School of Education	1,200.00
Chamberlin Scholarship Fund—Created by the Columbian Women of The George Washington University in 1932 in memory of Grace Ross Chamberlin, the income to be used for scholarships for young women	2,300.00
College Women's Scholarship Fund—Gift of the College Women's Club of Washington, D. C., in 1926, the income to be used for scholarships	500.00
Founders of Columbian Women Scholarship Fund—Created by the Columbian Women of The George Washington University in 1920, the income to be used for scholarships for women in Columbian College	5,000.00
Hardy Foundation Scholarship Fund—Created in 1957 by gift of Rose Lee Hardy Foundation, the income to be used for scholarships	2,000.00
Herron Scholarship Fund—Created by the Columbian Women of The George Washington University in 1925 in memory of Lillian Young Herron, the income to be used for scholarships for women in Columbian College	5,000.00
Knapp Scholarship Fund—Gift of the Columbian Women of The George Washington University in 1915 in memory of Nellie Maynard Knapp, the income to be used for scholarships for women	5,000.00
McWilliam Scholarship Fund—Bequest of Janet McWilliam, former president of Columbian Women, to the Columbian Women of The George Washington University, transferred to The University in 1954, the income to be used for scholarships	1,000.00
Wilson Scholarship Fund—Gift of Elizabeth Wilson in 1926 in memory of her parents, Lewes D. and Myrtie H. Wilson, the income to be used for scholarships in the School of Medicine	1,000.00

Davis Scholarship Fund—Gift of Isaac Davis in 1869, the income to be used for scholarships	*1,000.00*
D. C.—D. A. R. Scholarship Fund—Created in 1952 by the D. C.—D. A. R., the income to be used for scholarships for descendants of patriots of the American Revolution	8,230.00
Dorsey Scholarship Fund—Created in 1947 by Harryman Dorsey in memory of Charles Worthington Dorsey, the income to be used for scholarships	14,470.00
Drane Scholarship Fund—Bequest of Estella Constance Drane in 1957, the income to be used for a scholarship in the Department of Arts and Sciences, to be awarded to a graduate of Roosevelt High School	5,000.00
Erwin Scholarship Fund—Gift of Helen B. Erwin in 1955 in memory of Henry Parsons Erwin, the income to be used for a scholarship in the School of Engineering	5,000.00
Farnham Scholarship Fund—Gift of Mrs. Robert Farnham in 1871, the income to be used for scholarships in Columbian College	1,000.00
Fisher Scholarship Fund—Bequest of Esther Brigham Fisher in 1951, the income to be used for scholarships	1,000.00
Hampel Scholarship Fund—Gift of Evelyn Hampel Young in 1948 in memory of her mother, Anna Spickel Hampel, the income to be used for Scholarships for married women in the School of Education or Columbian College	500.00
Harvey Scholarship Fund—Bequest of Emma Elizabeth Harvey in 1923, in memory of her daughter, Elma Lewis Harvey, the income to be used for scholarships in Columbian College for young women of the Protestant faith and of the Caucasian race	4,650.63
Hazelton Scholarship Fund—Bequest of Lillie S. Hazelton in 1950, the income to be used for scholarships	5,000.00
Kendall Scholarship Fund—Gift of Amos Kendall in 1869, the income to be used for a scholarship now designated by the Board of Trustees as one of the two High School Scholarships assigned to Western High School	5,960.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1958

SCHOLARSHIP FUNDS (Continued)

Morehouse Scholarship Fund—Created by A. Morehouse in 1861, the income to be used for scholarships for undergraduates intending to enter the Christian ministry	1,500.00
Pearson Scholarship Fund—Bequest of Paul Pearson in 1944, the income to be used for scholarships in the School of Pharmacy	2,840.00
Phi Delta Delta Fraternity Scholarship Fund—Created by Phi Delta Delta Fraternity in 1957, the income to be used for a scholarship for a woman student in the first year law class	1,000.00
Powell Scholarship Fund—Created by Levin M. Powell in 1886, the income to be used to train young men for entrance in the United States Naval Academy or to fit them to become mates and masters in the Merchant Marine Service of the United States	50,000.00
Shepard Scholarship Fund—Bequest of Lula M. Shepard in 1946, the income to be used for scholarships in the School of Government	10,000.00
Spencer Scholarship Fund—Created by Louisa J. Spencer in 1918, the income to be used for scholarships	7,422.20
Stone Scholarship Fund—An anonymous gift in 1893 in memory of Mary Lowell Stone, the income to be used for scholarships for women students of science in Columbian College	2,000.00
Swisher Scholarship Fund—Created by Dr. Charles Clinton Swisher in 1941, the income to be used to award scholarships in medieval history	15,289.00
Walker Scholarship Fund—Gift of William Walker in 1824, the income to be used for scholarships for undergraduates intending to enter the Christian ministry	2,500.00
Withington Scholarship Fund—Gift of the New York Baptist Theological Seminary in 1830, on behalf of John Withington, the income to be used for scholarships	1,960.00
Woodhull Scholarship Fund—Bequest of Ellen M. E. Woodhull in 1921, the income to be used for scholarships in Columbian College	600.00

Burns Memorial Award Fund—*Gift of Persia Burns in 1937 in memory of her son, Byrne Thurtell Burns, the income to be used for an annual award in chemistry*	1,000.00
Cowles Prize Fund—Created in 1943 by John Henry Cowles, the income to be used for annual awards in the School of Government	3,000.00
Croissant Prize Fund—Bequest of DeWitt Clinton Croissant in 1941, the income to be used to award an annual prize for excellence in dramatics or dramatic studies	1,000.00
Cutter Prize Fund—Gift of Marion Kendall Cutter in 1902, in memory of E. K. Cutter, the income to be used for an annual award for excellence in the study of English	1,000.00
Davis Prize Fund—Gift of Isaac Davis in 1847, the income to be used for annual awards to members of the senior class who have made the greatest progress in elocution since their connection with the University	700.00
Essary Prize Fund—Gift of Helen Essary Murphy in 1948 in memory of her late husband Jesse Frederick Essary, the income to be used for an annual award in journalism	3,000.00
Evans Memorial Award Fund—Created in 1937 by friends of Joshua Evans III, the income to be used to establish a prize, as a memorial to an "outstanding life," to be awarded annually "to that man in the graduating class who has demonstrated his signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his fellows"	1,600.00
Fitch Prize Fund—Gift of James E. Fitch in 1883 in memory of Willie E. Fitch, the income to be used for an annual award to a senior student for the best general examination in chemistry	1,000.00
Glover Prize Fund—Created in 1957 by Charles C. Glover, Jr., in memory of his great-grandfather, Charles Glover, the income to be used for an annual award to the student in the Law School who has attained the highest average grade in the third-year, full time course	2,000.00

DESCRIPTION OF ENDOWMENT FUNDS (Continued)

August 31, 1958

PRIZE FUNDS (Continued)

Goddard Prize Fund—Gifts of Mary W. Goddard, Alice Douglas Goddard, and Frederick J. Goddard, in 1923, in memory of Morgan Richardson Goddard, Edward Carrington Goddard, and James Douglas Goddard; added to in 1941 by a gift of Frederick J. Goddard in memory of Alice Douglas Goddard. The income shall be used to award four cash prizes annually to the students making the highest averages in commerce, French language and literature, pharmacy, and American literature, respectively	5,520.00
Hubbard Prize Fund—Gift of Gertrude M. Hubbard in 1907 in memory of her husband, Gardiner G. Hubbard, the income to be used for an annual award for excellence in American history	1,000.00
Kappa Beta Pi Legal Sorority Prize Fund—Gift in 1958 of Eta Chapter of Kappa Beta Pi Legal Sorority, the income to be used for an annual award to the woman student who attains the highest average in her freshman year	350.00
Larner Prize Fund—Bequest of John B. Larner in 1933, the income to be used for an annual award in the Law School	800.00
Mahler Prize Fund—Gift of Martin Mahler in 1953, the income to be used for the "Martin Mahler Prize in Materials Testing"	100.00
Ordronaux Prize Fund—Bequest of John Ordronaux in 1909, the income to be used for annual awards in the Law and Medical Schools	5,000.00
Ruggles Prize Fund—Gift of William Ruggles in 1859, the income to be used for an annual award for excellence in mathematics	500.00

Staughton-Elton Prize Fund—Created by gift of Romeo Elton of Exeter, England, in 1860, the income to be used for annual awards for excellence in the Latin and Greek languages, one to be called the Staughton Prize in Latin, the other the Elton Prize in Greek	500.00
Sterrett Prize Fund—Gift of the Reverend J. MacBride Sterrett in 1911 in memory of his son, J. MacBride Sterrett, Jr., the income to be used for books to be awarded annually to the student obtaining the highest average in general physics	300.00
Swisher Prize Fund—Gift of Charles Clinton Swisher in 1941, the income to be applied yearly to enlarging the sum set apart for the Historical Prize established in his name by the Historical Club, December 7, 1936	1,000.00
Walsh Prize Fund—Gift of Thomas F. Walsh in 1901, the income to be used for an annual award for the best essay on some topic in Irish history	1,000.00
Weddell Prize Fund—Gift of Virginia Chase Weddell in 1923, the income to be used to award annually the Alexander Wilbourne Weddell Prize to the student submitting the best essay upon the general subject of the promotion of peace among the nations of the world	5,000.00

RESERVES FOR PROTECTION OF INVESTMENTS OF ENDOWMENT FUNDS

Reserve for Protection of Consolidated Endowment Funds Investments—Created from gains arising from the sale of investments and a portion of the net income of Consolidated Endowment Funds Investments	102,443.70
Reserve for Protection of Scottish Rite Endowment Fund Investments—Created from gains arising from the sale of Scottish Rite Investments	62,736.30

DESCRIPTION OF PLANT FUNDS

August 31, 1958

Field House Fund—Created by the Class of 1946 to assist in building a field house	1,847.00
Ford Foundation Hospital Building Fund—Gift of the Ford Foundation for additional Hospital construction	239,718.36
Hospital Equipment Funds—	
Cancer Clinic—Beta Gamma Phi Sorority	437.31
Cancer Clinic—Special	2,872.70
Cancer Clinic—Zito	406.79
Multiple Sclerosis	44.00
Obstetrics and Gynecology	1,202.80
Physical Medicine	184.02
Prenatal Nursery	102.91
Wolfe Ophthalmology	30,008.05
Law Center Fund—Created in 1945 by various donors, to be used for the acquisition of land and the erection of a building for the use of the Law School	145,826.85

Library Book Funds—Gifts of Various Donors

	Created	
Brooklyn Alumni Club Library Fund	1950	430.50
Council of Religious Organizations Library Fund	1943	245.44
Hellenic Society Library Fund	1945	225.00
Merrill, Lynch, Pierce, Fenner and Beane Library Fund	1955	1,164.75
Noyes, Theodore W., Library Fund	1947	1,234.60
Phi Alpha Delta Library Fund	1956	10.00
Rosen Library Fund	1948	127.47

Marion M. Bond and Mary A. Wood Memorial Fund—Anonymous gift in 1953 to create a room for meditation and prayer in the Warwick Memorial Building	2,010.00
Pairo Fund—Created in 1931 by Richard E. Pairo, by devise and bequest, to be used for athletics	73,798.08
School of Medicine Building Fund—Created in 1945 by various donors, to be used toward the erection of a School of Medicine Building	5,284.00
Women's Activities Building Fund—Created in 1939 by various donors to erect a women's activities building	6,469.45

FORMS FOR BEQUESTS

To assist friends of the University who wish to make provision in their wills for the increasing needs of the University, the following wordings are suggested:

"I give and bequeath to the Trustees of The George Washington University, a corporation chartered by Act of Congress, and located in Washington, D. C...Dollars."

(1) (Unrestricted)

"to be used for the benefit of The George Washington University in such manner as the Trustees thereof may direct."

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SUMMARIES OF DOCTORAL DISSERTATIONS

1958

THE GEORGE WASHINGTON UNIVERSITY BULLETIN

VOL. LVIII No. 3

SUMMARIES OF DOCTORAL DISSERTATIONS 1958

WASHINGTON 6, D. C.

PUBLISHED IN DECEMBER
MCMLVIII

BY THE UNIVERSITY

PREFATORY NOTE

This number of the University BULLETIN contains summaries of the dissertations which have been accepted during 1958, in partial satisfaction of the requirements for the degrees of Doctor of Philosophy, Doctor of Juridical Science, Doctor of Education, and Doctor of Business Administration at The George Washington University.

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Page

Roy Lester Evans
A Study of the Preparation and Properties of Some Modified Proteins: I. Guanidination of Insulin; II. Nitroguanidination of Human and Bovine Serum Albumin (June 4, 1958) 50

Donald Franklin Flick
Studies on Fat Metabolism in Young Male Rats Exposed to Cold (June 4, 1958) 52

Vernon Jack Fuller
A Study of the Purine and Pyrimidine Bases in Cultures of *Entamoeba terrapinae* (June 4, 1958) 54

Frank Merril Hardy
Growth of Equine Encephalomyelitis Virus in Monolayer and Suspended Cultures of L Cells (June 4, 1958) 57

Richard Morton Michaels
Intensity Difference Limens for Narrow Bandwidths of Noise at Various Pulse Lengths (June 4, 1958) 60

Azizali Farrukh Mohammed
Some Aspects of the Economic Impact of Foreign Aid on an Underdeveloped Country: the Case of Pakistan (June 4, 1958) 65

Julius Earle Officer
The Growth and Morphological Development of Two Psittacosis Strains in Tissue Cultures (June 4, 1958) 71

Raymond Howard Reno
The Theological Background of Christopher Marlowe's *The Tragical History of Doctor Faustus* (June 4, 1958) 75

Robert Watson Sylvester
The Guidance Function in Manpower Recruitment for the United States Army (June 4, 1958) 82

George Vartkes Vahouny
Studies on the Absorption of Cholesterol in the Rat (June 4, 1958) 86

Ross Charles Horning, Jr.
Winston Churchill and British Policy Towards Russia, 1918–1919 (October 18, 1958) 91

Krishen Dayal Mathur
Some Aspects of International Control and Peaceful Uses of Atomic Energy (October 18, 1958) 98

Herbert S. Posner
Investigations on the Mechanism of Biological Hydroxylation of Aromatic Compounds (October 18, 1958) 114

Page

DOCTOR OF JURIDICAL SCIENCE

Irving Ladimer
Legal and Ethical Implications of Medical Research on Human Beings (February 22, 1958) 121
David Hottenstein
Military Jurisdiction Over Persons Not in Uniform (June 4, 1958) 129

DOCTOR OF EDUCATION

Jennings Fletcher Ballard
A Study and Analysis of Problems of Navy Officer Candidates (June 4, 1958) 141
Mary Louise Collings
An Evaluation of Supervision in the Cooperative Extension Service (June 4, 1958) 150
Anna Ruth Meeks
An Evaluation of Guidance Services in the Senior High Schools of Baltimore County, Maryland (June 4, 1958) 156
George Herbert Charlesworth
The Relationship Between Varying Degrees of Centralized Control and Organizational Patterns for Selected Aspects of Teacher Education in Multiple Purpose Institutions (October 18, 1958) 162
Wylie Hayden Russell
Administrative Organization of the Larger High School (October 18, 1958) 169
John Patrick Walsh
Qualifications, Preparation, and Competencies of Trade and Industrial Teachers (October 18, 1958) 173

DOCTOR OF BUSINESS ADMINISTRATION

Warren Kenneth Watson
The Use of Management Consultants by the United States Air Force (February 22, 1958) 183
Robert Fenn Towson
An Analysis of Outside-Staff Services Available to Management (with Emphasis on Their Application to the Special Problems of Small Business) (June 4, 1958) 192
Abdul-Munim As-Sayid Ali
A Study of the Banking System and Its Role in the Economic Development of Iraq (October 18, 1958) 198

SUMMARIES OF DISSERTATIONS SUBMITTED FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

A FAUNISTIC STUDY OF THE SHALLOW-WATER OCTOCORALLIA OF THE WEST INDIAN REGION

by FREDERICK MERKEL BAYER[*]

The alcyonarian fauna of the West Indies is prolific and conspicuous and has been known for many years, with the natural result that a great many more species have been described than actually exist. The deep-water fauna, which received little attention prior to the work of Verrill, was thoroughly reviewed by Deichmann in 1936. The shallow-water and reef fauna was the subject of a series of extensive papers by Kükenthal and his collaborators, Kunze, Moser, Riess, Bielschowsky, and Toeplitz, but this ambitious study appears to have been based upon inadequate collections and its usefulness is seriously limited by the number of synonyms and misidentifications that it contains. No comprehensive survey of the fauna exists, and there is no satisfactory guide for the identification of specimens.

This paper, which was prepared at the request of Dr. P. Wagenaar Hummelinck, of the Natuurwetenschappelijke Studiekring voor Suriname en de Nederlandse Antillen, forms such a guide and at the same time reviews the fauna to the extent permitted by the collections in hand and the literature. With Dr. Hummelinck's collection of West Indian octocorals serving as a nucleus, the pertinent material in the collections of the U. S. National Museum was critically revised and correlated with the literature in order to gain an accurate picture of the known fauna. As a result of this study, it was possible to recognize 75 species of alcyonarians belonging to the orders Telestacea, Alcyonacea, Gorgonacea, and Pennatulacea inhabiting the reefs and shallow waters of the warm western Atlantic. An additional 21 species from deeper water are also included for comparative purposes or because they inhabit the transitional zone just below the region of active reef growth. Eighteen species and a growth form are described as new to science. Each species is diagnosed and illustrated with drawings of the details of spiculation and, in the case of new or especially common species, photographs of the colonial form. Taxonomic keys with couplets illustrated for clarity are provided to facilitate the identification of specimens. The previously known species described in this paper are arranged as follows:

1. Order Telestacea: (Telestidae) *Telesto corallina* Duchassaing, *riisei* (Duchassaing and Michelotti), *sanguinea* Deichmann, *flavula* Deichmann, *fruticulosa* Dana.

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[*] B.S. 1948, University of Miami; M.S. 1954, The George Washington University; Ph.D. conferred February 22, 1958. Consultant in charge of research: Waldo LaSalle Schmitt, *Research Associate, Smithsonian Institution; Research Consultant in Invertebrate Zoology, The Graduate Council.*

2. Order Alcyonacea: (Alcyoniidae) *Nidalia occidentalis* Gray. (Nephtheidae) *Neospongodes portoricensis* (Hargitt); *Eunephthya nigra* (Pourtalès).
3. Order Gorgonacea: (Briareidae) *Briareum asbestinum* (Pallas). (Anthothelidae) *Iciligorgia schrammi* Duchassaing; *Tripalea clavaria* (Studer); *Diodogorgia nodulifera* (Hargitt); *Erythropodium caribaeorum* (Duchassaing and Michelotti); *Titanideum frauenfeldii* (Kölliker); *Anthopodium rubens* Verrill. (Keroeididae) *Keroeides richardii* (Lamouroux). (Acanthogorgiidae) *Acanthogorgia aspera* Pourtalès. (Plexauridae) *Plexaura homomalla* (Esper) forma *typica, homomalla* (Esper) forma *kükenthali* Moser, *nina* Deichmann and Bayer, *flexuosa* Lamouroux; *Pseudoplexaura crassa* (Ellis and Solander), *dubrovskyi* (Stiasny), *esperi* (Verrill), *porosa* (Houttuyn); *Eunicella modesta* Verrill; *Eunicea laxispica* (Lamarck), *pinta* Deichmann and Bayer, *mammosa* Lamouroux, *succinea* (Pallas) forma *typica, succinea* (Pallas) forma *hummelincki* Stiasny, *fusca* Duchassaing and Michelotti, *laciniata* Duchassaing and Michelotti, *tourneforti* Milne Edwards and Haime forma *typica, tourneforti* Milne Edwards and Haime forma *atra* Verrill, *asperula* Milne Edwards and Haime, species indet., *calyculata* (Ellis and Solander) forma *typica; Muriceopsis sulphurea* (Donovan), *flavida* (Lamarck); *Plexaurella dichotoma* (Esper), *nutans* (Duchassaing and Michelotti), *grandiflora* Verrill, *grisea* Kunze, *pumila* Verrill, *fusifera* Kunze; *Muricea muricata* (Pallas), *atlantica* (Kükenthal), *laxa* Verill, *elongata* Lamouroux, *pendula* Verrill. (Gorgoniidae) *Lophogorgia sanguinolenta* (Pallas), *violacea* (Pallas), *punicea* (Milne Edwards and Haime), *miniata* (Milne Edwards and Haime), *rathbunii* (Verrill), *hebes* (Verrill); *Pacifigorgia elegans* (Duchassaing and Michelotti); *Leptogorgia virgulata* (Lamarck), *setacea* (Pallas), *medusa* (Bayer), *stheno* (Bayer), *euryale* (Bayer); *Antillogorgia bipinnata* (Verrill), *kallos* (Bielschowsky), *rigida* (Bielschowsky), *blanquillensis* (Stiasny), *acerosa* (Pallas), *americana* (Gmelin); *Gorgonia flabellum* Linnaeus forma *typica, flabellum* Linnaeus forma *occatoria* Milne Edwards and Haime, *ventalina* Linnaeus; *Phyllogorgia dilatata* (Esper); *Pterogorgia citrina* (Esper), *anceps* (Pallas), *guadalupensis* Duchassaing and Michelin. (Primnoidae) *Callogorgia verticillata* (Pallas).
4. Order Pennatulacea: (Renillidae) *Renilla reniformis* (Pallas), *mülleri* Kölliker. (Virgulariidae) *Virgularia presbytes* Bayer.

A total of 96 species are described from the region including the Bermudas, the southeastern coast of the United States, the Bahamas and Antilles, and the east coast of South America south to the reefs of Brazil. Of these, 52 species occur in the reef habitat proper or closely associated with it, and another 23 species occur in depths of 25 fathoms or less. The orders Telestacea, Alcyonacea, and Pennatulacea are together represented by only 13 species within the bathymetric limits set forth, the remaining 83 belonging to the order Gorgonacea. The littoral and reef-dwelling representatives of the last-named order belong for the most part to the two families Plexauridae and Gorgoniidae, which include 35 and 34 species respectively. When the shallow-water alcyonarian fauna is added to the deep-water fauna as reported by Deichmann, a total of 196 species is revealed for the area. This is a fauna of only modest proportions when compared with that of the East Indies, where some 445 species (exclusive of Pennatulacea) were obtained by the *Siboga* Expedition, but nevertheless, the gorgonians are the dominant sessile animals on many of the reefs of Florida, the Bahamas, and the Antilles. This dense population consists chiefly of about a dozen species, all the others being rare or of local occurrence, so it appears that the reef fauna is rich in individuals but poor in species.

The distribution of alcyonarians is influenced by a variety of factors, among them salinity, temperature, illumination, depth of water, and character of the bottom. It is not possible to single out any one factor as the most important, since they all interact closely, but there is no doubt that temperature is one of the most influential. Although temperature requirements and tolerations have not been determined experimentally for alcyonarians, they can reasonably be assumed to parallel more or less closely those of the principal reef-formers. It has been observed that formation of reefs does not take place in waters that drop below 68°F for any appreciable period during the winter. Since active growth of reefs occurs at Bermuda, the northernmost limit of the West Indian fauna, its annual minimum temperature of 66°F may be taken as the limit for reef formation in the West Indian area. Tropical alcyonarians occur up to this minimum isotherm on both coasts of Florida.

Most alcyonarians are stenohaline and require salinities within the range found in the open sea. However, the occurrence of a few species, such as *Leptogorgia setacea* of the southeastern coast of the United States, in the brackish inshore waters of bays and river mouths indicates that a limited degree of euryhalinity does occur in the Octocorallia.

A rough and solid bottom is apparently as necessary for the attachment of gorgonian planulae as it is for those of madrepores, and the importance of this requirement is clearly demonstrated on the west coast of Florida, where reef communities gain a foothold only on the scattered solid outcrops on an otherwise broad, sandy shelf. A few species of Gorgonacea are known to live unattached, the colonies apparently doing so in some cases because no suitable objects were available for attachment, in others because they were broken loose from their original solid support but continued to live in a prone position. Certain deep-water gorgonacean groups (families Chrysogorgiidae and Isididae) that inhabit areas with a scarcity of solid material are able to adapt the form of their holdfast to the conditions present at the time of metamorphosis, producing either a calcareous basal disk for attachment to shells and stones or a branched rootlike process for anchoring the colony firmly in a muddy bottom. The pennatulaceans, which are adapted for life on soft bottoms, require either sand or mud and therefore are not found closely associated with reef communities.

The octocorals of the reefs are restricted bathymetrically to the upper 25 fathoms of water, perhaps in part because of their symbiotic zooxanthellae, which require sunlight for the process of photosynthesis, but the physiological relationships of zooxanthellae and their coelenterate hosts are in general less clearly understood in the octocorals than in the madrepores, so the bathymetric-photic correlation cannot be stated in general terms. Obviously, the vertical distribution of those octocorals that are dependent upon their zooxanthellae for nutrition is governed by the physiological requirements of the algae. In those octocorals that are nutritionally independent of their zooxanthellae (as appears to be generally the case among scleractinian corals) other ecological factors must limit bathymetric distribution.

In the West Indies, almost all of the shallow-water octocorals, which represent 38 per cent of the total known fauna, belong to the two families Plexauridae and Gorgoniidae. Very few members of these families extend downward below 25 fathoms, and very few members of the deep-water families venture into water shallower than this. In the East Indies, where a rich tropical alcyonarian fauna exists, 59 per cent of the species taken by the *Siboga* Expedition lived in depths shallower than 50 meters, but this fauna is inordinately rich in groups poorly represented in the West Indies, where 85 per cent of the species are gorgonaceans. In both regions, somewhat more than 40 per cent of the gorgonaceans occur in depths of less than 50 meters.

The alcyonarians are an important component of the reef community, perhaps more so in the West Indies than elsewhere in the tropics because of the great abundance of a few conspicuous forms in the reef habitat. They provide shelter and sustenance for a wide array of casual associates, epizoa, commensals, and parasites, ranging from other coelenterates to fishes. Moreover, when they die they liberate great quantities of calcareous spicules which are then available for incorporation in the general mass of the reef.

The alcyonarian fauna of the warm western Atlantic shows a high degree of endemism and only indistinct subdivision into smaller faunal regions. It is possible to distinguish a Carolinian fauna occupying the southeastern coast of the United States, part of its species occurring only along the Atlantic coast, part of them with isolated populations in the northern Gulf of Mexico. At least three species follow the continental coast more or less continuously from the Carolinas to Brazil. This is basically a continental fauna and its species do not range out into the West Indian islands.

The fauna of the West Indies is essentially an insular fauna and it suffers depletion wherever it invades continental coasts. The largest number of reef-dwelling species seems to occur in the northern islands of the Lesser Antilles, the Greater Antilles, and the Florida Keys; at the present time, more species are known from the last-named locality than from any other area in the Antillean region, but it certainly is the most thoroughly explored of all. Intensive collecting will probably reveal an equal or larger number of species in the northeastern part of the Antilles. Antillean species extend along both coasts of Florida northward to about 66°F minimum surface isotherm, but their number is sharply diminished. A small group of the hardiest species reaches Bermuda, which is the northernmost outpost of the West Indian fauna.

Records indicate that the Antillean fauna becomes attenuated also toward the southern end of the Lesser Antilles, and the Leeward Group along the coast of South America has a fauna comparable in many respects with that of Bermuda. However, the fauna of Bermuda is restricted by the low temperature of the water during midwinter (66°F), a limiting factor that does not exist at the low latitude of the Leeward Islands. The fauna must instead be restricted by other ecological factors, perhaps imposed by the proximity of the continental coast.

The alcyonarian fauna of the reefs of Brazil, although composed largely of West Indian genera—*Plexaurella, Muriceopsis, Lophogorgia*—shares few species, perhaps no more than three or four, with the Antillean region to the north, and is probably the most distinct of the subregions of the western Atlantic.

Within the broad limits of the warm western Atlantic faunal region, extending from Bermuda south to Brazil, we can distinguish an insular Antillean fauna centered in the northeastern part of the Antilles; a continental Carolinian fauna along the southeastern Atlantic seaboard, some of its species with disjunct populations in the Gulf of Mexico and some following virtually the entire coastline from the Carolinas to Brazil; and a Brazilian fauna extending northward along the South American coast as far as Trinidad.

The presence in the West Indies of alcyonarian genera known also in the tropical Indo-West Pacific can be explained only on the basis of former faunal continuity. The presence of a small amphi-American element clearly points to the existence of a continuous East Pacific

—West Atlantic (or trans-American) fauna during the past, and the high level of endemism in the West Indian region suggests a subsequent rapid development of a new fauna from remnants of the old, left behind after closure of the Central American seaways. The distribution of modern alcyonarians corroborates the former existence of a great equatorial sea, the Tethys, that permitted circumtropical distribution of marine animals, which geology tells us existed during much of Earth's history between the Cambrian and the Tertiary.

BANACH SPACE FUNCTIONALS AND MATRIX SUMMABILITY METHODS

by JOSEPH BLUM*

Throughout this dissertation the discussion is confined to real sequences and matrices. However, the results which are obtained carry over into the complex domain with only minor modifications.

Let A be a normal matrix. Then the field of A is a separable Banach space using the norm of A. If the norm of I is used the field of A may not be a normed space. In fact if A sums an unbounded sequence, then the norm of I is not admissible as a norm for the field of A. Therefore, it is natural to deal with the bounded field of A when using the norm of I. The bounded field of A may or may not be separable using the norm of I. Part II presents a group of theorems which establish conditions under which the bounded field of A is separable using the norm of I. The first significant result due to Agnew states that if a multiplicative matrix A sums a bounded divergent sequence, then the bounded field of A is not separable using the norm of I. Complete proofs are furnished for the extension of this result to conservative matrices using an approach suggested by Wilansky. A further extension has been conjectured by Wilansky, namely, that if A is normal, nonconservative, and $||A|| < \infty$, then either $||A^{-1}|| < \infty$ or the bounded field of A is not separable using the norm of I. This conjecture will be referred to as Wilansky's Conjecture. A counter-example is presented in Section 5 which shows the conjecture to be false. By adding certain conditions concerning the columns of the inverse matrix it can be shown that the bounded field is not separable using the norm of I. Examples are presented to show that these new conditions are not necessary conditions.

The theory of linear functionals over Banach spaces has been applied in Wilansky (1949a) to the study of conservative matrix methods. The same tool is applied in Part III to the study of matrices which are not weaker than some given normal matrix W. The special techniques due to Wilansky are adapted to obtain generalizations of most of the results established in Wilansky's paper. For a uniform treatment which lends itself most readily to generalizing the results of Wilansky it is best to restrict the discussion to normal matrices. Let w^k denote the k^{th} column sequence of $W^{-1} = (\overline{w}_{nk})$, and let $w = \{ w_n$ be defined by the equations $w_n = \sum_k \overline{w}_{nk}$ $(n = 1, 2, \ldots)$. Then as has been shown by Mazur (1930), the set $[w, w^1, w^2, \ldots]$ forms a basis for the field

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*B.S. 1940, College of the City of New York; A.M. 1948, The George Washington University; Ph.D. conferred February 22, 1958. Professor in charge of research: Florence Marie Mears, *Professor of Mathematics.*

of W. The following result is also due to Mazur. Let A be normal and L(x) be a linear functional over (A) such that $t_A(L) = L(a) - \sum_k L(a^k) \neq 0$. Then there exists a normal matrix B equivalent to A such that B(x) = L(x). It is shown in section 6 that $t_A(L) \neq 0$ is a necessary and sufficient condition for the existence of a normal matrix B equivalent to A such that B(x) = L(x). The following results also appear in section 6. A normal W-coregular matrix cannot be weaker than a normal W-conull matrix. If A and B are normal and (A) = (B) then A and B are both W-coregular or both W-conull. Every normal W-conull matrix is stronger than W. If A is a normal matrix then A is W-coregular if and only if AW^{-1} is co-regular. If A is W-co-regular and $||W^{-1}|| < \infty$, then A cannot sum every bounded sequence. The concepts of orthogonal functionals and matrices of type M are generalized in section 7. Let $(A) \supseteq (W)$ and let $\{t_k\}$ be a sequence such that $\sum_k |t_k| < \infty$. Then $L(x) = \sum_k t_k A_k(x)$ is a linear functional over (A). If L(x) vanishes for $x = w^k$ $(k = 1, 2, \ldots)$, then $\{t_k\}$ is said to be W-orthogonal to the columns of A, and L(x) is said to be a W-orthogonal functional over (A). Let (A) |U (W). If ϕ is the only sequence which is W-orthogonal to the columns of A, then A is said to be of type M_W. Mazur (1930) proved that for a normal regular matrix A to be consistent with every regular not weaker matrix it is necessary and sufficient that A be of type M. Wilansky (1949a) extended this result as follows. For a normal coregular matrix A to be consistent with every matrix B not weaker than A, such that B(x) = A(x) over F, it is necessary and sufficient that A be of type M. The following extension is proved in section 8. For a normal W-coregular matrix A to be consistent with every matrix B not weaker than A, such that $B(x) = A(x)$ over $F_W = [w, w^1, w^2, \ldots]$, it is necessary and sufficient that A be of type M_W. The same condition is shown to be necessary and sufficient for (W) to be dense in (A). It is also shown that A is of type M_W if and only if the set F_W forms a basis for the field of A.

A number of linear sequence spaces are considered in Part IV which are normed using the norm of a normal matrix A. In section 9 we describe conditions under which the spaces c, m, and $(A)_B$ are B-spaces using the norm of A. The first important results were obtained by Wilansky (1951). He has shown that if A is normal, $||A|| < \infty$, and the columns of A^{-1} converge, then for c to be a B-space with the norm of A it is necessary that $||A^{-1}|| < \infty$. A slightly sharper result is obtained. With the same hypotheses it is shown that for $(A)_c = (A) \cap c$ to be a B-space it is necessary that $||A^{-1}|| < \infty$.

If A is normal and coregular and A^{-1} has bounded columns, then for c to be a B-space it is necessary that $||A^{-1}|| < \infty$. Another result of Wilansky states that if A is normal and conservative and A^{-1} has bounded columns, then for m to be a B-space with norm of A it is necessary that $||A^{-1}|| < \infty$. We can therefore conclude that if A is normal, co-regular, and A^{-1} has bounded columns, then c and m are B-spaces with the norm of A or neither is a B-space. The theorem of Wilansky stated just above can be extended to nonconservative matrices. Wilansky suggested a proof based on Wilansky's Conjecture. A proof independent of the conjecture is furnished in section 9. Another theorem given by Wilansky states that if A is normal and m is a B-space using the norm of A, then c is also a B-space with the same norm. His proof is valid for conservative matrices, but his argument for nonconservative matrices depends upon the validity of Wilansky's Conjecture. A different proof is presented to support the extension. Another result which is obtained states that if A is normal, $||A|| < \infty$, and the columns of A^{-1} are bounded, then $(A)_B$ is a B-space if and only if $||A^{-1}|| < \infty$. Under the same hypotheses, therefore, both m and $(A)_B$ are B-spaces or neither is a B-space. It remains an unsettled question whether c can be a B-space without m being a B-space using the norm of a normal matrix A. In a similar vein we may ask whether it is possible for $(A)_B$ to be a B-space without m being a B-space also. The following result yields a connection between the properties of $(A)_B$ being a B-space and being separable using the norm of I. If A is normal, $||A|| < \infty$, and $(A)_B$ is a B-space using the norm of A, then $(A)_B$ is separable using the norm of I.

Let A and W be normal matrices and $(A) \supseteq (W)$. In section 10 we consider the problem of determining when (W) can be a B-space using the norm of A. Let Bd(W), called the bounded domain of W, be defined by Bd(W) = [x|Wx is bounded]. Conditions are given for Bd(W) to be a B-space using the norm of A. These problems are shown to be equivalent to the problem of determining when c and m are B-spaces using the norm of AW^{-1}, and a number of results are obtained which depend upon the discussion in section 9. Under certain conditions the field of a matrix A can be normed (using the norm of A) even though A is nonreversible. It is shown that if (A) can be so normed and imbedded in a normed space X in which (A) is closed, then (A) is a B-space using the norm of A.

In section 11 we present a brief discussion of Henstock's Theorem. Stronger forms of the theorem are stated and a new simple proof is given for one of them.

PROBABILITY AND THE STATE OF MIND

by JACOB BERNARD CHASSAN *

The contention of I. J. Good that the state of mind is an important factor in the application of probability theory, and L. J. Savage's definition—albeit "very tentative"—of *statistics proper* as "dealing with vagueness and with interpersonal difference in decision situations" not only provide a broad conceptual framework for the application of statistics to psychiatry, but also lead to a consideration of the application of certain of the tools of psychiatry to problems of inference. The essential contribution of psychiatry to the general problem of inference lies in the exploration of mental processes which take place outside of awareness. The application of psychoanalytic techniques to the recovery of data on a conscious level merits consideration as an important tool for the prevention and correction of distortion in observation and inference.

Various techniques used in the treatment of neurotic patients may be regarded as tools for the correction of error in certain kinds of beliefs and actions consistent or associated with such beliefs. In recent years these techniques have been applied to an extent to the correction of the psychoanalyst's biases in his clinical observations, so that, in a broad sense, psychiatry becomes a tool not only for the treatment of mental disorder but also for the correction of distortion in observation and inference in the process of treating for mental disorder.

While the importance of unconscious processes is most directly evident in the application of scientific methodology to psychiatry and related behavioral sciences, these processes cannot gainfully be ignored in other more objective areas of application. Thus when we say that two scientists disagree on an important interpretation or decision despite the fact that they have available the same set of data, can we say that the objective, factual, and/or experimental data which they have in common is really all of the data relevant to the interpretation or decision at hand? Ought we to consider a priori all such interpersonal differences as purely random or as simple matters of taste? The body of experience accumulated in the field of psychiatry and clinical psychology indicates the negative.

An appreciation of the importance of personal judgment and bias in probability is found almost throughout its history, going back at least to Bayes whose definition of probability was given entirely in subjective terms. A person's probability concerning the outcome of an event according to Bayes is determined by what action in the form of betting odds he is willing to give or receive according to his expectations of the outcome of the event. Although this approach to probability in the early eighteenth century can be regarded as the beginning of contemporary subjective decision theory, or of mathematical behavior theory, there was very little further development of this line of thought until comparatively recent years.

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The early development of probability theory appears to have been almost entirely within the framework of games of chance. The classical definition of probability as given by Laplace near the end of the eighteenth century, in which probability is defined in terms of a priori equally possible events, was directly influenced by earlier applications to games of chance, as were the contributions of Pascal and Fermat about a century and a half before Laplace and the earlier contributions of Cardano. From a practical point of view the classical definition runs into the difficulty that it is impossible to define or determine "equally possible" alternatives in many classes of events about which probabilities are calculated. Among the earliest of such applications of probability were those dealing with the data of life expectancy. Laplace recognized the applicability of probability to such areas of study but apparently was not concerned with the difficulty of defining the a priori equally possible elementary events in their contexts.

The advent of *Bernoulli's Theorem,* several decades before Laplace, has often been thought of as the beginning of the frequency theory in which probability is defined in terms of relative frequency over a long series of observations, and in which the classical definition of Laplace is discarded entirely. However, Bernoulli proved his theorem within the classical theory, so that it cannot be considered as having established mathematically the frequency theory. In a limited sense it can be said to establish a bridge between the classical and the frequency point of view. Within the classical framework, the theorem suggests, e.g. that if for some reason an a priori probability cannot be determined, it can be estimated from the outcome of repeated trials—the greater the number of trials, the greater, on the average, the accuracy of the estimate. More significantly it suggests the application of the calculus of probability to the class of events for which equal a priori probabilities have no clear meaning.

The British mathematician R. L. Ellis, one of the first to propose a frequency definition of probability, independent of the classical theory, was critical of the tendency to consider Bernoulli's Theorem, regarded by Laplace as a natural law, as necessary for the justification of the use of statistical probabilities. He states correctly that Bernoulli's Theorem does not prove a necessary connection between a priori "equally likely" probabilities and empirically determined relative frequencies.

He presents a point of view in which the concept of probability is based on long series of observations. *This* he takes as a priori in preference to the classical approach.

A more extensive treatment of frequency theory was given in 1866 by John Venn. Although he takes a rather extreme objectivistic position in attributing complete objectivity to the frequency concept, Venn's work, nevertheless, is a definite contribution toward stressing empirical observation as the basis of the application of probability theory. The contributions of Ellis and Venn are representative of the beginning of a line of thought more fully developed on an axiomatic basis in this century by von Mises, Copeland, and Reichenbach.

Although the importance of the personal element in applications of probability was recognized by Laplace, he did not stress this adequately in particular cases. One of the first definitions of probability within the Laplacian framework to mention personal judgment specifically was that given by Lubbock and Bethune in 1830. They further attributed subjective differences in probabilities to corresponding differences in individual prior knowledge.

A somewhat broader view of the subjective aspects of probability was taken by the mathematical philosopher Augustus DeMorgan who, in 1847, wrote of differences in probabilities as relating to both difference in prior knowledge and in the state of mind. In stating that "we cannot invent a case of purely objective probability", and that "we have to assume all that is requisite to make our experience of the past the means of judging the future", DeMorgan noted the subjective element which is present in any approach to probability, including the frequency theory. The subjectivist point of view of DeMorgan was in sharp contrast to the views of Venn who took the position that all persons may obtain the same statistical data "if they choose to take the trouble, therefore knowledge inferior to this is not wanted", and that all could be equally well-informed (and presumably all would agree)—if not "it is their own fault".

The contrast between the points of view of DeMorgan and Venn reveals a basic difference between the subjectivist and objectivist approaches in probability, as it existed in the nineteenth century, and as it still exists, to some extent, today. The principal value of the objectivist viewpoint is that it does stress the value of empirical data, and that its origin is identified with that of the frequency definition of probability, a very important concept in the subsequent development of probability theory and applied statistics. But, as compared with DeMorgan's view, the objectivist position of Venn either severely limits the kind of data to which probability theory can be applied and/or delegates to statements of probability an unwarranted dogmatism.

Keynes' contributions in the present century in the tradition of Laplace has often been viewed as subjectivist. His own view of his *Treatise* is rather that it presents a rationalist objective concept of probability. Keynes attempts in this work to overcome some of the difficulties of the classical theory, particularly with reference to a more careful and noncontradictory approach to the selection of equally likely cases. In a later work, his essay on Ramsey, he appears to move closer to the subjectivist view in his acknowledgment of the existence, as Ramsey puts it, of a "human logic" as distinguished from formal logic.

B. O. Koopman, in a series of papers develops a mathematical theory of subjective probability as a "branch of intuitive logic" in which he holds that introspective or subjective data is prior to objective experience, and that "probability derives directly from the intuition." He states that probabilities "may vary from individual to individual and from moment to moment with the same individual depending as it will upon his state of mind." Koopman considers intuitive probability as entirely independent of the frequency definition and prefers to consider observed frequencies as objective "statistical weights" (rather than as probabilities).

Reichenbach, who holds a rather eclectic view of frequency theory, nevertheless, contends that all notions of probability must ultimately rely on the frequency concept. This represents an "identity conception" of probability as opposed to Carnap's "disparity conception" of a probability$_1$ and a probability$_2$ where the former (i.e., probability$_1$) is regarded by Carnap as a logical semantical concept, and the latter as a long-run relative frequency.

The beginning of the modern approach to the frequency theory of probability may be considered to have started with the contributions of R. von Mises. He defines probability as a mathematical limit within an axiomatic approach that avoids the circularity of previous definitions. The axioms from which he undertook to develop the theory did much for the development of an operational approach to the concept of randomness. The view that he holds of the probability calculus is that it is the "theory of mass phenomena and repetitive events, in the same sense in which mechanics is the theory of the phenomenon of motion, or geometry, the theory of the phenomena of space."

The frequency theory of von Mises may be described as an *interpreted* axiomatic theory of probability in which probability is defined in terms of statements about the "world of events". Mathematical difficulties and disputes about the frequency theory have led to the use of Boolean algebra and the mathematics of measure theory in the development of a more abstract and "simple" axiomatic theory of probability as manifest in contributions of Kolmogorov and Cramér. Although measure-theoretic probability is, from a formal point of view, a branch of pure mathematics, it is also regarded by many statisticians and applied mathematicians as a mathematical model of probability as a relative frequency. Probability measure is accordingly viewed as an idealized representation of a relative frequency "in the long run".

Jeffreys, writing from a neoclassical point of view objects to the frequency theoretic view of probability on the grounds that infinite sequences of observations cannot be made in the real world, and that therefore the definition of probability as a mathematical limit presumes to state in precise mathematical form, something about real phenomena which actually can never be shown to exist. Jeffreys prefers not to define probability mathematically but rather to consider it as a *rational degree of belief*. While von Mises wishes to restrict probability theory to repetitive phenomena, Jeffreys, in the tradition of Bayes, Laplace, and Boole, believes that probability theory is applicable to a wider range of investigation. According to Jeffreys, and others holding a rationalist view of probability, a probability expresses a relation between a proposition and a set of data. While adherents to a strict frequency point of view oppose the use of Bayes' Theorem with respect to the assumption of the existence of a priori probabilities of parameters, both rationalist and subjectivist theorists consider its application in such cases to be generally valid. The rationalist a priori probabilities in general are based on equally likely assumptions (Bayes' Postulate) deriving from considerations of symmetry or the principle of indifference. Those of the subjectivist may be determined on the basis of more personal experience or bias.

The first significant contributions to the subjectivist approach since the time of Bayes were those of Ramsey. The latter considered Bayes' approach as fundamentally sound, but lacking in generality. Ramsey selects as the psychological basis of his theory of degrees of belief (or subjective probability) that a person's actions are determined by his desires and opinions. He holds that judgment about the strength of one's belief becomes a judgment of how one would act in hypothetical circumstances—with the determinants of action not necessarily accessible to consciousness. His view that degrees of belief are to be measured in relation to relevant actions and decisions, is not only basic to the framework of contemporary subjective decision theory but also is relevant to the study of psychopathological and other interpersonal processes (including those of participant observation), when such processes are considered from the point of view of belief and distortion in belief—as the latter are often manifest more through action than as stated or fully conscious beliefs which would be consistent with such action.

Although Ramsey formulated his concepts of degrees of belief and utility on an axiomatic basis, his presentation was not intended as a completely rigorous development of the theory. A more technically complete and rigorous treatment of the subject was started by Von Neumann and Morgenstern and pursued by contributors such as J. Marschak; M. Friedman and L. J. Savage; Herstein and Milnor; and others.

The concept of a subjective probability sequence, from an elementary point of view, may be regarded as deriving from Reichenbach's objectivist frequency interpretation of the "single case" and is consistent with Good's approach, in considering the influence of the state of mind as a factor in the selection of a data system from among observationally disjunctive vectors. Selection is influenced by the totality of past relevant experience in which personal bias or preference may be considered broadly as a function of previously experienced relative frequencies. For example, the psychoanalytic concepts of transference and countertransference, and Sullivan's concept of parataxic distortion are descriptive of errors in expectation as manifest in psychopathology and in the study of psychopathology, which are the result of overgeneralizations of previous experience in interpersonal processes. Repression and selective inattention are devices which, to varying degrees, interfere with the observation and influence of new data in the correction and avoidance of distortion. New data may be lost through repression because their conscious acknowledgment might appear to undermine a body of beliefs strongly identified with personal security. Data may be selectively inattended to avoid a feeling of discomfort or anxiety.

Neurotic symptomatology may be viewed in this context as action no longer capable of supporting an old body of beliefs, and psychoanalytic therapy, as aimed toward the transformation of a body of beliefs—first, perhaps through intellectual insight, and then, of greater importance, through the achievement of emotional or true insight. The psychoanalyst considers true insight to be achieved when feelings result in actions which are consistent with the intellectual acceptance of the new, and presumably desirable, body of beliefs. This is entirely consistent with Ramsey's view that degrees of belief are to be measured in relation to relevant actions and decisions.

A consideration of the manifest individual variability in actions and decisions supports Barankin's concept of personality process as a stochastic process, and the concept of a stochastic patient state presented in the present work. While the stochastically defined patient state is obviously relevant to the measurement of psychopathological degrees of belief, the stochastic aspect of interpretation is also involved in such measurement.

THE MECHANISM OF PARTICIPATION OF THE SYSTEM ASCORBIC ACID$\rightleftarrows$DEHYDROASCORBIC ACID IN CORTICOSTEROID METABOLISM

by ALBERT FRANK DEBONS *

The work of a number of prominent investigators has established the necessity of ascorbic acid (vitamin C) in human nutrition. Once in the animal body, the vitamin appears to be distributed in appreciable concentrations in those organs which exhibit a high order of metabolic activity. The adrenal gland is reported to have the highest concentration, although the brain, spleen, liver, and kidney contain significant amounts in a decreasing order of magnitude. The pattern of distribution of ascorbic acid in the various organ sites serves an important clue in investigating the possible role of the vitamin in the physiological and biochemical processes of the body.

A number of approaches have been available in ascertaining its role in human nutrition. Lack of the vitamin, as in ascorbic acid deficiency, has revealed lesions in intermediary carbohydrate, fat metabolism, corticosteroid biogenesis, and collagen formation. Excess administration of the vitamin has revealed significant changes mainly in several aspects of corticosteroid synthesis and breakdown, some of which are reported here.

Borsook and Schultze have shown that the oxidation of ascorbic acid proceeds at a physiological pH of 7.40. In the presence of animal tissue, the oxidation of ascorbic acid is readily inhibited. Dehydroascorbic acid is readily reduced in the animal body to ascorbc acid. The agents responsible for the reversible reduction of dehydroascorbic acid in animal tissue appear to be reduced glutathione and fixed sulfhydryl compounds.

The significance of the high concentration of ascorbic acid in the adrenal and the role of ascorbic acid in adrenocortical function and corticosteroid metabolism has not been fully elucidated. The work of Sayers *et al* and others have clearly demonstrated that a loss of ascorbic acid from the rat adrenal cortex occurs during stress and after injection of adrenotrophic hormone. Along with increased cortical activity evidenced, these workers associated the loss of ascorbic acid with either hormone synthesis or release. Ratsimamanga has shown that the survival of guinea pigs on a scorbutic diet was enhanced by cortical hormone administration. It was suggested by these workers that ascorbic acid plays an important part in the production and utilization of adrenal cortical hormones. Zwemer has reported the isolation of a glycosidelike substance consisting of ascorbic acid and a ketonic steroid from rat adrenals. Other workers have failed to confirm the existence of a steroid ascorbic acid complex in adrenal effluent blood. Dao and Shank have reported increased secretions of corticoids in the urine of patients receiving massive doses of ascorbic acid. Kayahan found that the administration of large doses of ascorbic acid to normal male adult subjects brought about a significant increase in the urinary corticoid excretion and a significant decrease in the 17-ketosteroid output. These workers have attributed the rise of corticoids in the urine to an increased production of cortical hormones by the adrenal. Bacchus and Heiffer found that the administration of cortisone with and without ascorbic acid to adrenalectomized female rats had a profound influence on the urinary 17-ketosteroids and corticosteroids. Ascorbic acid treatment was found to prevent the rise in the excretion of corticosteroids beyond that in normal animals given cortisone and saline alone. More recently, by *in vitro* techniques, these investigators have shown that excess ascorbate injections into rats brought about a significant decrease in the ability of rat tissue to metabolize the characteristic delta-4-3-ketone and 17 OH, 20, 21 ketol side chain of adrenal steroids.

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Several experiments were conducted in this study in an attempt to elucidate the action of ascorbic acid and/or dehydroascorbic acid on the metabolism of cortisol. Attempts were made to correlate changes in the metabolism of ascorbic acid and dehydroascorbic acid with that of the metabolism of cortisol. Further it was decided to investigate the action of tissue slices from the liver, kidney, and adrenal on the metabolism of ascorbic acid and/or dehydroascorbic acid.

It was observed that the Δ^4-3 ketone and 17 OH, 20, 21 ketol groupings of cortisol were metabolized at different rates by rat and guinea pig liver and kidney tissue slices. The investigation of cortisol metabolism was undertaken in these tissue sites in the presence of added ascorbic acid and/or dehydroascorbic acid *in vitro* and in tissue slices exposed to pretreatment with excess daily intraperitoneal injections of ascorbic acid. The ability of rat liver tissue preparations to metabolize the Δ^4-3 ketone grouping is significantly depressed in the presence of ascorbic acid and dehydroascorbic acid *in vitro* and ascorbate by injection *in vivo*. Ascorbic acid and dehydroascorbic acid added *in vitro* or ascorbate administered *in vivo* failed to alter the metabolism of the 17 OH, 20, 21 ketol side chain of cortisol. Addition of ascorbic acid and dehydroascorbic acid to *in vitro* preparations of guinea pig liver tissue in the presence of cortisol had a significant effect in inhibiting the metabolism of the Δ^4-3 ketone grouping. The metabolism of the 17 OH, 20, 21 ketol side chain was not affected by ascorbic acid added *in vitro*. Ascorbate administered *in vivo* depressed both the metabolism of the conjugated unsaturated system and the side chain by guinea pig liver tissue. It appears that ascorbic acid exerts an action on the metabolism of the 17 OH, 20, 21 ketol grouping somewhat differently in the two species under investigation. The nature of ascorbic acid synthesis in the rat and the daily dietary requirement of ascorbic acid in the guinea pig might serve as important factors for consideration.

Experiments concerned with the partition of ascorbic acid and dehydroascorbic acid in cortisol metabolism experiments revealed that ascorbic acid at a physiological pH of 7.40 readily oxidizes to dehydroascorbic acid. It was also observed that dehydroascorbic acid undergoes almost complete oxidation at pH of 7.40. In the presence of liver tissue the oxidation of ascorbic acid and dehydroascorbic acid is significantly inhibited. These findings are in complete agreement with the work of Borsook, Stotz, and Schultze. The experiments reported also revealed that in the presence of cortisol the ability of liver tissue to reduce dehydroascorbic acid is depressed. In the presence of liver, the Δ^4-3 ketone and C-20 carbonyl group of the side chain are saturated through the addition of hydrogen ions. Caspi and Hechter have reported the reduction of the Δ^4-3 ketone grouping of cortisone in perfusion experiments utilizing rat livers. The *in vivo* work of Gallagher on human subjects and of Dorfman on guinea pigs has established the reduction of hydrocortisone and cortisone at the C-20 carbonyl group. Tompkins has reported the isolation of the enzyme system in rat liver catalyzing the reduction of the Δ^4-3 ketone grouping. The hydrogen donor was found to be TPNH. Recknagel and Glenn have isolated the enzyme system in rat liver homogenates catalyzing the reduction of the C-20 carbonyl group. The active cofactor for the reaction was found to be DPNH. Recent work by Mason and by Milton has shown that ascorbic acid and (mono)dehydroascorbic acid participate in activating the oxidation of DPNH. The finding that dehydroascorbic acid inhibited the metabolism of the Δ^4-3 ketone in guinea pig liver tissue preparations suggests an important role of the system ascorbic acid $\rightleftarrows$ dehydroascorbic acid in the oxidation-reduction mechanisms in corticosteroid breakdown. It became apparent from the experimental findings that dehydroascorbic acid competes with cortisol for the available hydrogen ions. The observation that cortisol depresses the ability of liver tissue to reduce dehydroascorbic acid together with the ability of ascorbic acid to significantly depress both the metabolism of the Δ^4-3 ketone and 17 OH, 20, 21 ketol groups in all guinea pig liver tissue preparations makes this explanation quite tenable.

Slusher and coworkers more recently have shown that the adrenal effluent blood concentration of total ascorbic acid rises significantly in hypophysectomized rats injected intravenously with large doses of ACTH. In stress, ACTH stimulation to the adrenal increases. The adrenal responds to increase the production and release of cortical hormones. The simultaneous release of ascorbic acid into the blood may serve to maintain the blood titer of cortical hormones. These findings further suggest a role of ascorbic acid as an oxidation-reduction system in the peripheral metabolism of cortical hormones.

The above systems were studied in the kidney. It was found that rat kidney tissue metabolizes the Δ^4-3 ketone and 17 OH, 20, 21 ketol side chain groupings to a small extent. The addition of ascorbic acid and/or dehydroascorbic acid had no effect on the *in vitro* metabolism of cortisol. In the guinea pig, kidney tissue failed to metabolize the characteristic structures of cortisol to any significant extent. Here it was our experience to find a great deal of adsorption by boiled tissue control preparations. The nature of adsorption by boiled tissue and the extent of metabolism of cortisol by guinea pig kidney tissue slices requires further investigation. In ascorbic acid partition experiments, it was observed that kidney as well as adrenal tissue significantly inhibit the oxidation of ascorbic acid and dehydroascorbic acid. In the presence of cortisol, the ability of kidney and adrenal tissue to reduce dehydroascorbic acid is depressed. Others have shown that guinea pig kidney (homogenates and minced tissue) actively metabolize cortical hormones. If this is indeed the case, then ascorbic acid and/or dehydroascorbic acid might play an important role in the metabolism of cortical hormones by kidney tissue.

The data reported also demonstrate that adrenal tissue is quite active in inhibiting the oxidation of ascorbic acid and dehydroascorbic acid. The appearance of large amounts of ascorbic acid in the adrenal, an organ primarily concerned with oxidative reactions, serves to emphasize the importance of the system ascorbic acid-dehydroascorbic acid in the adrenal. Bacchus has demonstrated that the oxidative conversion of the Δ^5-bet-ol of dehydroepiandrosterone to compounds containing the Δ^4-3 ketone structure as well as the conversion of desoxycortisol to cortisol (11 beta-hydroxylation) is depressed in adrenals of ascorbic acid deficient animals. Moreover, it was shown that ascorbate decreased the spontaneous formation of 17 OH, 20, 21 ketol corticosteroids by normal adrenals. Kahnt and Wettstein have shown that 11 beta-hydroxylation is considerably enhanced by the presence of ascorbic acid. The importance of ascorbic acid as an oxidation-reduction mechanism in the adrenal becomes evident.

THE ADJECTIVE IN THE WORKS OF NOTKER

by ROBERT THOMAS GIUFFRIDA *

The position of Notker III (Labeo) of St. Gall as the most prolific and eminent prose writer of the Old High German period makes a complete grammatical and syntactic analysis of his works a necessity in the field of Germanic philology. With the material for such analysis available in the several editions of his works, and with the publication of the *Notker-Wortschatz,* Notker must now be accorded the long overdue treatment which he merits and needs. In their grammatical and syntactic studies of Old High German, scholars have either made scant reference to Notker or have relied upon a few treatises, such as those of Wunderlich and Manthey, to arrive at their conclusions. These investigations, though reliable, fail to provide the scope of inquiry necessary to a full understanding of Notker, in consequence of which he has yet to be included fully in our knowledge of the OHG period.

This dissertation, intended as a contribution to a complete Notker syntax and grammar, has a twofold purpose. First it seeks to carry out a number of specific analyses with respect to the adjective as it is found throughout Notker's writings. Its second purpose is to bring together all occurrences of the adjective as they are found in the text. Thus the writer hopes to facilitate the process of carrying out other studies of this part of speech, such as the semantic analysis made for the adjective in Old Saxon by Roedder and for Wolfram von Eschenbach by Wolff.

Initially all of the adjectives are treated according to stem class, that is -a, -ja, and -wa stems. Within the -a and -ja stems, the adjectives are grouped by suffix. Thus, under the -a stems we find those with suffix -ig, -eg, -in, -isg, -lih, -sam, -los, etc., as well as past participles used adjectivally. The -ja stems, which in Notker end in -e (OHG -i), include those with suffix -haft(e), -bare, and the compounds of -muote, -herze, -helle, etc., as well as present participles. Among the -wa stems we find few words and those are of limited occurrence.

The division according to stem leads to the analysis of the declensional endings which is carried out in Chapter II. Here paradigms of the -a, -ja, and -wa stems are formed by using the words as they occur in the text. Though the three stem classes differ only in the uninflected form, the paradigms given are for the strong and weak declension, singular and plural of all genders. Leveling which has taken place, such as in the dat. pl. for which -en serves as the weak as well as the strong ending, is pointed out. Because the -wa stem adjective is as limited in occurrence in Notker as in OHG generally, it was possible to list individually all the occurrences in paradigm form. This treatment follows the method of Kelle in his presentation of the adjective in the individual works of Notker. But whereas Kelle's study is divided into five parts according to the various works, the listing of the -wa stems here is all-inclusive. A similar unified presentation of the declensional forms of the -a and -ja stems would make the dispersed studies of Kelle more accessible and more useful.

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The use of the declensional endings is taken up in the second part of Chapter II. Though one might proceed to study the uninflected, strong and weak forms to see in what manner Notker employed them, this writer has investigated instead the three types of adjectival usage, i.e. the attributive, predicative, and substantive, and under each type has analyzed the declensional forms found. Since the primary function of the adjective is to denote an attribute of the noun, attributive usage provides us with a greater variety of declensional endings and diverse positions of the adjective. Generally the single attributive adjective precedes the noun. Instances in which it follows, e.g., when used with a numeral, sometimes with *al,* in dependent phrases, etc., are pointed out and discussed. If the single attributive adjective does not precede the noun, except in the instances mentioned, it is found that stylistic considerations, adherence to the Latin original, or both may be responsible. With regard to the declensional forms, we see that in the absence of the definite article the adjective is strong (uninflected or inflected), with the definite article it is declined weak, after *ein* almost everywhere the adjective is strong (uninflected or inflected) except for a few cases of "mechanische Regelung", i.e. the standardization of the use of the weak ending after the indefinite article declined. The possessive pronoun appearing in an adjective expression causes the adjective to be either uninflected or weak. A few cases are found in which the possessive pronoun is followed by the adjective declined strong, and these are cited. *Diser* is followed everywhere by the weak declension, *al* by the strong.

Multiple adjective phrases give rise to several situations with respect to declension and position. In general the adjectives occur in pairs in the following manner: both may precede the modified object, both may follow it, one may precede and the other follow. The adjectives are in most cases joined by a connective *unde* or *ioh* (occasionally both) and usually show the same ending on both adjectives. Where this is not so, the first adjective is uninflected and the second declined strong. The lack of the definite article in expressions of this type accounts for the occurrence of the strong declension. In dependent phrases the adjective(s) usually show(s) the postpositive position. An additional modifier, e.g. *uuola,* may cause the second of two attributive adjectives to follow the noun. Where variations occur, again, stylistic preference or the Latin original may be responsible. When occurring in apposition the adjective follows the noun or pronoun to which it refers and is declined strong.

For predicative usage we find that Notker employs 18 verbs, of which *uuesen* and *uuerden* alone account for 95 per cent of the occurrences. The predicate adjective appears preponderantly in the uninflected form (2,614 times) but rather often in the inflected (strong) form (under 300 times). Where the subject of the verb stands next to the predicate adjective the strong declension of the adjective is likely to be found, although not in all cases. Only with the comparative and superlative degrees do weak endings appear on predicate adjectives. Among the cases in which the strong declension occurs are predicate accusatives.

Used substantively the adjective follows the attributive usage with respect to declensional endings. The uninflected form is used mostly in the creation of abstracts such as *guot, ubel, reht, uuar(e),* etc. There are slightly fewer than 900 cases of the weak adjective used substantively as compared with less than 400 in which it is strong (uninflected and inflected).

Chapter III brings together in several categories adjectives which lie within the same descriptive sphere. This is carried out by means of several factors. Meaning, of course, is given primary consideration. In addition to this, the grouping is aided by certain suffixes (-in for "Stoffadjektiva", -isg, used often to create adjectives of nationality, -wa stems which are mostly adjectives of color, etc.). Further, the presence in several words of a common element, e.g. *-uuiz-* (cf. geuuizen, ungeuuizen, unforegeuuizen, fureuuizlih, fureuuizkerne, uuizzig, uuizzelos, unuuizende) which logically relates all words built around it to a given category, helps in the grouping. Within each section the words are given thus, e.g., *uuunderchunnig* (1) (1,777,18) L. doctissimus, indicating that the word in question occurs once, in Piper, volume I, page 777, line 18. The citation is given for those adjectives occurring but once, elsewhere only the frequency in ( ) following the word, and the meaning are given. Frequently there arise cases in which several adjectives have the same meaning. Here the synonymity is analyzed in order to determine the difference in connotation, if any.

Among the various categories of meaning we find: "Stoffadjektiva" (divided here according to the substances of which things are made), adjectives of color (including the -faro compounds), adjectives referring to peoples and nationalities, physical form and dimension, time, number, quantity, position, those denoting physical qualities (including such as are perceived by the senses), words which describe emotion, a large group in the religious-abstract-philosophical sphere, and another group of adjectives in the intellectual field. The category containing adjectives pertaining to the nature and spirit of man, as do the preceding groups, is subdivided either according to a common morphological element or by uniting those words which exhibit greater closeness in their connotations. Finally all adjectives which do not belong in any of the large categories previously discussed are listed.

Two appendices list the frequency of occurrence of the adjectives, the first in alphabetical order, the second by descending frequency. It is by means of this second list that we find which adjectives Notker preferred in his writing and we are able to determine also that: 579 adjectives occur but once, 203 twice, 108 three times, 57 four times, 48 five times, etc. Only 60 adjectives of very high frequency account for half of the adjective expressions used by Notker. Despite his large adjective vocabulary Notker used but a few words extensively.

The appendix which gives the occurrence of each adjective in its context indicates whether the citation has the (U)ninflected, (S)trong, or (W)eak form, its location according to Piper, and whether or not it is a gloss (Gl.). A list of the present participles (-ja stems) and past participles (-a stems) follows that of the occurrences, and finally all adjectives which appear solely as glosses are given.

THE RIKKEN MINSEITO (CONSTITUTIONAL DEMOCRATIC PARTY) OF JAPAN (1927–1940); ITS ANTECEDENTS, STRUCTURE, AND OPERATION

by HARRISON MELSHER HOLLAND*

The Minsei party of Japan was formed June 1, 1927 and was dissolved August 15, 1940, to make room for the emergence of the Imperial Rule Assistance Association, an organization designed to prepare Japan for World War II. While the party had only thirteen years of political life, its progenitors dated back to 1882 when Count Shigenobu Okuma, one of the leaders of the Meiji Restoration, formed the Kaishinto party. At best, the Minseito was a political party in only the loosest sense of the word. It was more accurately a federation of cliques, groups, and factions, banded together in rather unstable coalition for the purpose of achieving certain political objectives.

Inevitably, the Minseito was the product of its heritage and environment. It was oligarchic and authoritarian in organization because its forerunners had been this way and because Japanese society was essentially cast in this mold. The main forces serving to shape the character of the party were feudalism, militarism, and the emperor system. Although western liberal concepts, the enforced Europeanization of Japan by Meiji leaders, and major international developments also influenced the course of Minseito history, the party was basically molded by these three main forces.

The Meiji period saw the foundations laid for the development of Japanese political parties. A central fact in the political history of the transition from the decadent feudalism of the Tokugawa regime to the modern period of the Meiji era was the dominant role played by the samurai, especially the lower class samurai from Satsuma, Choshu, and Tosa. From this group came the Army which overthrew the Tokugawa dictatorship. From this group also came the leaders of Meiji Japan, its greatest statesmen and diplomats, its generals and admirals, many of its industrialists and bankers. These men were raised in a feudal and military environment and while recognizing the need for reform in the Japanese Government were unsympathetic with demands for representative government.

Such demands came first from liberal elements in the clans of Tosa and Hizen. Leaders of these clans such as Taisuke Itagaki and Shigenobu Okuma, exploited liberal sentiment to bring pressure to bear upon the Satsuma-Choshu dominated government to broaden its base to include representatives from their clans. It was Itagaki who founded the first important political society, the *Risshisha* in Tosa, and it was this society which played an important role in the events leading to the formation of the first political parties.

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By 1880 the constitutional movement had spread throughout most of the country. Leadership of the movement had been captured by the rural aristocracy. They became the standard bearers of the constitutional movement and formed the backbone of the first political party. While the landowner was essentially feudal minded, he had another outlook, that of the commercial capitalist, and it was this interest that brought him into politics.

The Imperial Rescript of 1881, promising a constitution and a parliament, set the stage for the organization of the first political parties in Japan. The first party to be formed was Itagaki's Jiyuto which was organized October 29, 1881. The formation of the Kaishinto, the forerunner of the Minseito, followed on March 5, 1882.

The government took strong action against these parties. Laws restricting the right of public meetings and curtailing the freedom of the press were enacted and vigorously enforced. Efforts were made to create dissension within and between the parties with marked success. By 1883 the parties were beginning to lose strength. In 1884 the Jiyuto dissolved, and the Kaishinto became inactive by 1885. The steady pressure applied by the government against the parties undoubtedly accounted for part of their loss of strength. By pursuing what was termed a policy of conciliation and repression, the government, after issuing the Imperial Decree promising a parliament, embarked on a repressive campaign that proved very effective. The new parties were also at a disadvantage because the center of their operations was in Tokyo where they worked in strange and uncongenial surroundings beyond the reach of local ties in clan and province upon which they depended for support. The enforcement of the rule forbidding the formation of provincial party branches and combinations with other political parties further restricted their effectiveness, and there existed few concrete and well-defined issues upon which they could agree. Lack of party cohesion, which made it difficult for party leaders to enforce discipline and establish efficient organizations, also contributed to party weakness. This situation was remedied to some extent later on when circumstances became more favorable to party growth, but loose organization has always been the bane of political parties in Japan. Another important consideration was the fact that since there was no parliament, proceedings of the parties lacked reality and gave the impression of being stage performances. And finally, the failure of this first effort to built a democratic government was due to weak and compromising leaders such as Itagaki and Shajiro Goto who were only too ready to use the forces they commanded as means to advance their own careers. Once the driving force behind them threatened to become unmanageable, they quickly switched from the liberal movement to the government and made their peace with the bureaucracy.

With the promulgation of the constitution February 11, 1889 and the formation of the first parliament, the parties came back to life. The Jiyuto was reestablished in January 1890, the Kaishinto regrouped its forces, and the government once again took measures to restrict the activities of the parties. In the first general election of 1890, the Jiyuto received 130 seats, the Kaishinto 40, and the small parties supporting the government 130. This was a resounding victory for the forces of representative government.

With the ascendency of the Jiyuto and the Kaishinto proved by this first election, the parties began their first venture into parliamentary government. Their record was not impressive. Soon the Jiyuto began to cooperate with the government which angered the Kaishinto and other small anti-government parties. To strengthen their position vis-à-vis the Jiyuto, the Kaishinto, and these small parties reorganized themselves into the Shimpoto on March 1, 1896. But it was not long before the Shimpoto was also seeking to gain favors from the government. By 1898 the contest for power between the parties and the government had reached an impasse. Clan governments had found their traditional privileges curtailed, and parties, especially the Jiyuto, had tried compromises and found them richer in promise than in fulfillment. Leaders of the Jiyuto and Shimpoto began to talk of an amalgamation. Out of these talks was born the Kenseito on June 21, 1898. The party lasted for exactly five months. In November 1898 the Jiyuto faction of the party broke away and reorganized itself into the new Kenseito. The Shimpoto faction quickly followed, reconstituting itself as the Kensei-honto.

The next important development in the growth of the party government in Japan was the formation on September 13, 1900 of the Seiyukai whose first president and guiding genius was Prince Ito. The choice of Ito as leader of the Seiyukai prompted leaders of the Kensei-honto to ask Okuma to head their party. On December 18, 1900 Okuma became president of the Kensei-honto. In 1902 the party changed its name back to Shimpoto.

From 1902 to June 1, 1927 (the date of the formation of the Minseito), the Shimpoto evolved into the Kokumint0, the Kokuminto into the Doshikai, the Doshikai into the Kenseikai, and finally the Kenseikai into the Minseito. This was a period of Seiyukai dominance over the Shimpoto and its successors in Diet affairs. Finally in 1924, the Kenseikai, under Count Kato, won the election and Kato was asked to form a government. The Kenseikai was to remain in power until 1927 when it was succeeded by the Seiyukai under Baron General Giichi Tanaka.

Count Kato died in 1926 and was succeeded as premier and president of the Kenseikai by Reijiro Wakatsuki, the home minister. Wakatsuki, however, was to experience considerable difficulty in getting his legislative program through the Diet, due mainly to the activities of the opposition Seiyukai. To forestall Diet dissolution and check the growing power of the Seiyukai, Wakatsuki, and Takejiro Tokonami, the president of the Seiyuhonto, met in secret in February 1927 to form a league for mutual cooperation and assistance. This league became the forum for negotiating the eventual amalgamation of the Kenseikai and Seiyuhonto into the Minseito on June 1, 1927.

At the inaugural ceremonies of the Minseito, Yuko Hamaguchi was elected president. Wakatsuki, Tokonami, and several others were appointed as senior advisers. In 1929 the party took over the reins of government from the Seiyukai and remained in power until December 1931. During its stewardship of the Japanese Government the Minseito witnessed the beginnings of war in China, the deterioration of the Japanese economy due to the world-wide depression, the rise of militarism and right-wing extremism, and the decline of party government in Japan.

The years in which the Minseito was in power in Japan provide the best opportunities for viewing the party's organization, structure, and operations. Regardless of the existence of party rules, regulations, and procedural forms, the organizing and functioning of the Minseito remained a very personal business. Individuals, not party rules, dictated party action. Party leaders, not party regulations, prescribed the various roles to be played by minor party functionaries. Although there were party rules, very flexible in content, which covered such matters, the leaders proposed and the leaders disposed. All ramifications of party life felt their power and influence. While the leaders of the Minseito were all powerful in the conduct of party business, they were subject to the pressures of external forces and often these outside influences shaped not only the form and character of party decisions but the party's organizational structure as well. Such factors as the war in China; the depression of the early 1930's; the increasing power of the militarists; the struggle for power among the bureaucrats, militarists, and big business; feudalism; and the attitude of the Japanese people toward their emperor—all were influential in shaping the course of party activity.

The Minseito had a constitution with regulations governing the admission of new members, stipulations concerning the term of office of its officials, procedures for selecting the party leadership, and rules setting forth the jurisdictional boundaries of various party committees. However, regulations prescribing the activities of such party organizations as the Executive Board, the Political Affairs Research Committee, the various boards of advisers, consultants, and the like, were highly elastic, thus permitting wide and differing interpretations to be placed upon them.

The four key officials of the party were the President, the Secretary General, the Chairman of the Executive Board, and the Chairman of the Political Affairs Research Committee. The President was empowered by the Constitution to create or dissolve committees within the party as circumstances dictated, to be the final adjudicator of factional disputes, to maintain order and discipline, and to be the chief policy maker in the party. His principal assistant for party management was the Secretary General. The Chairman of the Executive Board was appointed by the President and was a powerful figure in the formulation and execution of party policies and programs. The Chairman of the Political Affairs Research Committee, as head of the largest committee in the party, wielded considerable influence over party policy through the operations of his committee. Besides these four officials, there were senior advisers who, because of their political prestige and their connections with business and financial interests, were in a position to exert great influence on the party. Many of these men served as links between the party leadership and the great business houses which supported the party.

The relationship between the Minseito and the Mitsubishi *zaibatsu* provides an interesting clue to the operations of the party. Since the days of Count Okuma the Mitsubishi interests had maintained close connections with leaders of the Minseito and its antecedents. Some of these connections were solidified through marriage. Count Kato, for example, was married to the sister of Baron Iwasaki, the head of the Mitsubishi *zaibatsu,* and Junnosuke Inouye, the finance minister in the Hamaguchi and Wakatsuki cabinets and a leading Minseito official, was married to the daughter of Baron Iwasaki. Through these intimate connections with the Minseito, Mitsubishi was able to obtain favored treatment when the Minseito was in power. In such matters as government loans, tariffs, concessions, etc., Mitsubishi was able to prosper during Minseito regimes. Mitsubishi's financial support of the party and its politicians was indispensable to the functioning of the party.

The selection of the president of the Minseito had both formal and informal procedural aspects. Formality was used to insure dignity; informality to make certain that the choice of a president reflected the wishes of the powerful politicians in the party. In selecting other important party officials the same general pattern prevailed. The party leaders would consult with the president and among themselves on presidential recommendations, give their decisions to the president, and expect their choices to be approved by the president—and they usually were.

Control of the Minseito rested in the hands of a small leadership group. These leaders, many of whom headed the major factions in the party, were constantly striving to improve their personal position in the party. Because of this drive for personal power, factional conflicts often broke out. The nature and intensity of these conflicts were influenced not only by the complicated "feudal" relationships which prevailed in the party but by outside pressures generated by events in China, economic depression, and the machinations of militarists, bureaucrats, and big business. The power of these leaders stemmed not only from their connections with leaders in the business world, militarists, and bureaucrats, but also from the support they were able to obtain from local "bosses" in their home constituencies. The activities of these local bosses, who usually operated in the provinces and whose *jibans* (spheres of influence) constituted what little the Minseito had of so-called "grass roots" strength, were vital to the success of the party, especially at election time.

Party leaders generally paid little attention to local party organizations, and as a result local party branches were little more than social clubs or loosely delineated spheres of influence under the control of a local party leader.

The shifting of Japanese politicians from one party to another appears strange to western political observers. Many of the Minseito defections occurred following the defections of Tokonami, Kodera, and other party leaders, each of whom had a considerable following in the party. The relative ease with which party members could transfer their party allegiance reflects the highly volatile nature of Japanese politics and the lack of firmly established political principles governing the conduct of politicians. It is also a unique commentary on the special nature of these politicians' sources of power. With their local *jibans* intact and with their ability to play the role of boss in a society where such a role is buttressed by history and tradition, they could move from faction to faction, party to party almost at will, playing their capricious game of politics with no apparent thought in mind other than furthering their own political ambitions and aspirations.

Factionalism was a virulent malignancy that attacked all Japanese political parties. It contributed to party instability, damaged party prestige, and weakened the parties' ability to function properly. The Minseito was torn by four major factional disputes during its lifetime, and all contributed to the party's final demise. The first dispute involved Home Minister Adachi and Railway Minister Egi who were both struggling to succeed Hamaguchi as president of the Minseito. The second dispute involved Mr. Tokonami, and the party leadership over the Minseito's China policy. The third schism involved a conflict between two leadership groups within the party. Again the issue was China policy and the domination of party affairs by a few men. The fourth factional dispute was caused by the determination of Adachi to become president of the party and Premier of Japan. His principal adversary was Prime Minister Wakatsuki. This factional struggle caused the resignation of the Wakatsuki cabinet and the ultimate loss by the Minseito of the reins of government. The damaging effects of factionalism can be seen throughout the whole course of party development in prewar Japan.

It was natural that the Minseito and its antecedents would develop organizational characteristics reflecting authoritarianism. It furthermore was natural that the Minseito and the Seiyukai would attach more importance to personalities than to principles. From the beginning the parties were organized around men rather than doctrines and reflected the wishes of their leaders, not the people. Authority rested with a few at the top who were unconcerned, for the most part, about the opinions and feelings of the electorate. The electorate, for their part, were largely ignorant of the meaning and responsibilities of democracy and so could not provide the pressure from the bottom to force the parties to act more responsibly.

The parties were not equal to the task of promoting democracy and representative institutions in Japan. The fault, however, did not lie exclusively with them. True, the parties were oligarchic, unresponsive to the will of the electorate, corrupt, and factionalized, but their nature could hardly have been different given the characteristics of the society in which they were founded and in which they developed. Even if the parties had been democratically organized and inspired by democratic principles, it is doubtful whether they could have withstood the overwhelming challenge of militarism that was to engulf them and Japan by 1940.

What the prewar parties did do was to lay the training ground for the growth of postwar political parties in Japan. Organization, leaders, and a knowledge, at least, of the responsibilities of democracy were bequeathed to postwar Japan by the Minseito and the Seiyukai. In addition, the present-day parties have the advantage of a different constitution insuring them a predominant role in the parliamentary process; the threat from the military has been removed by Japan's defeat in World War II; the Imperial Institution has undergone substantial change; and organized labor and the socialist parties are providing a challenge to the conservatives which appears to be moving Japan closer to more responsible government. These factors place postwar political parties in a much stronger position to promote democracy in Japan than was the fortune of the Minseito and the Seiyukai.

MILITARY SUBJECT MATTER IN GALDÓS

A Study of the Literary Treatment of Military Matters by the Spanish Author Benito Pérez Galdós in Ten of His Historical Novels Known as the *Tercera Serie, Episodios Nacionales*

by DAVID RENWICK KERR*

The problem which this study sought to resolve was how Galdós had dealt, in the literary sense, with military subject matter in the Third Series of his National Episodes. As used here, the expression *military subject matter* means sentences, phrases, or words that have any military color and meaning. Battles, sieges, soldiers, and guns are obvious military items. But included also in the category are many other things related to war, to the soldier, his needs and his deeds: marches, skirmishes, guard duty; discipline, leadership, morale, panics; supply, evacuation, medical, and finance services; strategy, tactics—to cite only a few.

The steps followed in the study were: identification of the military matter; measurement of its bulk; analysis of its nature; appraisal of the author's use of it in this Series.

The novels are similar in size, comprising between thirty and forty chapters, each of about two thousand words. To identify and keep track of all military subject matter, every passage was marginally marked in the texts. A count, line-by-line, of the passages so marked determined the proportion of military matter in a chapter. The figure was converted to percentage; and the chapter percentages were averaged for each novel, whose content in military subject matter was then stated percentagewise.

The military material having been located and measured in this manner, it was then examined as a literary product. Its workmanship and style, its power and interest, and the balance in military and nonmilitary content were scrutinized. What was the scope of the military passages? Were they merely history in extract? or did they have some fictional character and merit? Did Galdós voice valid military opinions? Had his style been affected by the copious infusions of military materials? What, broadly, had he accomplished with these materials? The questions were studied, and answered.

The dissertation was pointed to three types of reader: the student of the novel and of creative writing, for his consideration of the military content as a basic literary ingredient or stock-in-trade of an author; the soldier, for glimpses of little-known campaigns; and the admirer of the works of Galdós, in the hope that these works may be viewed from one additional angle.

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Introductory remarks on Spanish geography and history were necessary to the reader's understanding of my text. Galdós, of course, presupposes such a knowledge in *his* reader. The geography, therefore, was briefly touched on: the outline of the Iberian Peninsula is well known; its characteristics, however, are not so familiar to most people. Spain, occupying five-sixths of it, is notable for its mountains which, near the coastal zones, rise five to ten thousand feet; and for its "mesetas" or dry tablelands of two thousand feet elevation and more, also cut by rugged ranges and a few rivers. The traditionally conservative Basque provinces and Navarre in the North were the chief theater of operations in the First Carlist War. They form a rectangle of fifty by one hundred miles, difficult mountainous terrain extending from Bilbao through Pamplona. In the mountains north and northwest of Valencia was an important secondary theater called the Maestrazgo.

The sixteenth century was Spain's peak in political and military achievement, under Hapsburg Charles V and Philip II. The seventeenth was its zenith in literature. Thereafter national prestige and power declined. Hapsburg and Bourbon kings, a weak line with a mental taint, furnished inadequate leadership. Absolute monarchy, and male succession, were their one common platform. The Napoleonic wars early in the eighteen hundreds found Charles IV and Ferdinand VII out of their depth. Spain was overrun by the French, and fought a war for independence. This gave impetus, politically, to the spread of liberal thinking in Spain as never before, and literarily to the advent of the Romantic movement. A segment of the Spanish people began to have misgivings about absolute monarchy, and in 1812 a liberal constitution was written by patriots.

Ferdinand, restored to his throne in 1814, had a troubled reign, harshly repressing liberal trends and legislation. In the interest of his daughter, born 1830, he had the Salic law set aside. On his death in 1833 she was proclaimed Isabel II. Meanwhile, Don Carlos, Ferdinand's brother, had been the presumptive male heir: to him, therefore, this was a usurpation. Strong elements of Church and Army backed him in this view. Among the Spanish people, those in the North especially, many conservatives rallied to support his rights. Dynastic civil wars were the result: the first Carlist war, 1833–40; sporadic uprisings from the forties to the sixties; and the second Carlist war, 1873–76.

By mid-century, in Spanish literature, the Romantic movement was spent and fiction was awakening to realism. Benito Pérez Galdós, born 1843 in the Canary Islands, was sent to Madrid at nineteen to study law. Soon he found his true vocation in writing. In 1870 he published a novel: it was acclaimed as marking a new era in Spanish realistic fiction.

Success spurred him on. In the next fifty years he wrote some forty-nine novels and dramas on contemporary Spanish society, many of them very controversial in theme. Over the same period, he published the monumental *Episodios Nacionales,* forty-six historical novels dealing with nineteenth century Spain. They were in approximate chronological order, and were arranged in five series. The First Series treated the Napoleonic period; the Second, the reign of Ferdinand VII; the next, the first Carlist war; the Fourth, Isabel II's reign; the Fifth covered the years 1869–80.

Four dissertations have been written on *Episodios Nacionales* topics. None of them confines itself to the Third Series. None of them examines critically and at length the literary treatment of its military subject matter.

The Third Series, which Galdós started to write on the eve of the Spanish-American War, consists of ten historical novels. They were published in the three years 1898–1900. The gist of each of these works follows, in capsule form:

Zumalacárregui (with 45 per cent military material in its text) describes from the campaign when the Carlists were at their best, 1834–35; to the siege of Bilbao; and the death, wounded in action, of Carlism's premier soldier. In the parallel fictional theme, an eccentric young priest-soldier José Fago takes part in the battles, views them and General Zumalacárregui in detail, and dies the same day as the general.

Mendizábal (3 per cent military) observes political and social life in 1835 Madrid, through the eyes of young, mysterious Fernando Calpena, central figure of the Third Series.

De Oñate a La Granja (12 per cent military) briefly embroils Calpena in the war, 1836, when he enters the Basque country on a rash romantic project; he is wounded while befriending two young women in distress: the de Castro sisters.

Luchana (27 per cent military) shows a two-month siege of Liberal Bilbao, life in the city, with romantic overtones; and relief of the city by Espartero's attack Christmas Eve, 1836.

La campaña del Maestrazgo (25 per cent military) portrays the savagery of operations, 1836, in a minor area, where reprisals and murder of prisoners are prevalent; this, through fictional experiences of an aged Spanish nobleman in Carlist captivity.

La Estafeta romántica (3 per cent military) is made up wholly of letters; the fiasco of the 1837 expedition of Carlist forces to the gates of Madrid is told, and laid to Don Carlos; fictional threads are drawn together; Calpena has lost one sweetheart, is being groomed for another.

Vergara (44 per cent military): campaign in the North in 1837–39, secret negotiations of Maroto with Espartero to end the war, peace of Vergara and escape of Don Carlos, the part of Calpena in campaign and negotiations, his discovery that he is the natural son of a Polish prince and Spanish duchess.

Montes de Oca (10 per cent military): story of civil conflicts in 1840–41; abdication of regent Cristina; rebellion in her behalf and execution of leaders; the army life of (fictional) Colonel Ibero, with personal and political factors.

Los ayacuchos (8 per cent military): troubled Spanish politics and the 1841–43 regency of Espartero, rebellion in Barcelona viewed and analyzed by Calpena, Ibero and Calpena marry the two de Castro sisters.

Bodas reales (4 per cent military): events of 1843–46 when uprisings by General Narváez and other conservatives topple the regency of Espartero and Isabel II is declared "of age" and marries at sixteen; fictionally, Ibero and Calpena are in exile; Madrid society is seen through the eyes of the Carrasco family, provincials; Carrasco is involved in an abortive rebellion; the strongly drawn personage, Leandra Carrasco, collapse in madness induced by postwar stresses and dies in a grieving household, while, through the city, rejoicing and royal wedding festivity bring the Series to a contrasting dramatic close.

Many literary critics comment on the work of Galdós, his style, his art, and the place of his novels as literature. Most of them discuss his *Episodios Nacionales*. Perhaps half of them mention the Third Series, generally observing that it is more polished but less spontaneous than his First and Second series (written 1873–79) and that its ten novels were widely read. Some find the Third Series less epic in quality than its predecessors, whilst others perceive no epic quality in either, but only a vigorous realism. Menéndez y Pelayo and others emphasize that the *Episodios* taught Spanish history to many persons who otherwise would never have studied it. Though no one has said so, the *Episodios* also taught *military* history of nineteenth century Spain. To their military subject matter, few critics give more than incidental mention. Still fewer make any scrutiny of it except for its social, historical, and political angles—never for its own sake. Diligent study of all available criticism shows that little notice has been taken, and little study made, of military materials used by Galdós.

Not a military man himself, Galdós had heard from his father and his uncle, both veterans of the War for Independence in Spain, many accounts and details of their campaigns. He was an omnivorous reader and had a large library. Before embarking on the writing of the Third Series, he had made a trip of research to the Basque provinces. In this Series he incorporates military topics in wide variety. Even in *Mendizábal* with its minimal military content, one notes thirty-five passages, on such matters as national war policy, strategy, discipline, morale, recruiting, infantry personnel, cavalry, artillery, supplies, tactics, command, security measures, intelligence, weapons, and the like. These subjects are used mainly in the war minister's communication with his general in the field.

In *Zumalacárregui,* by contrast, two hundred eleven such citations were found. Their scope and detail, of course, are much greater. Topics on operations matters, for instance, range from command, estimate of the situation, staff work, topography, intelligence, strategy, marches, detachments, security, halts, billets, to tactics and battles, meeting engagements, guerrillas, village combat, defense, attack, siege, property destruction, and cruelty to prisoners.

The author touches on many weapons, but never describes them. He tends to prefer the animate over the inanimate, as he does in his other works. People are his life interest. Leaders, followers, recruits, generals,—nearly always he has a few words of description for them; sometimes he develops them thoroughly, vividly. This leads him to draw many campaign scenes. Some of his battle descriptions were readily followed on a map; and his consistency confirmed later by visiting the terrain. Careful comparison, moreover, with authoritative works on the period proved a high degree of accuracy in his accounts. He is successful, too, in creating a true soldier flavor for military scenes.

He employs many devices to sustain interest: shifts from conventional narrative form to dialogue and back; letters from unknown individuals, and epistolary form for one whole novel; changes of scene, from a war-torn area to Madrid, for example; characters from all levels and callings, including about one in four from the military; mystery characters running through several novels before solution. These devices are not new, but Galdós uses them effectively and delightfully.

He draws on many sources for historical and military data and ideas. It has been asserted that he copied, verbatim, too freely. If true, this would affect his end-product, embodying as it would, two styles. In a search for style differences between his military and nonmilitary passages, an extensive testing of the novels was carried out. Throughout the Series, sixteen hundred items were studied and tallied: descriptions, opinions, and several minor stylistic elements. Their incidence in military passages parallels closely that found in the nonmilitary: thus it is evident that military content has not modified his style and manner of writing.

Within the Series, Galdós presents subject matter remarkable for its diversity, interest, and genuineness of military color. Keyed to Spanish life of the eighteen thirties and forties and to the dynastic civil war of the period, this body of material includes all army echelons from supreme command to the squad; all combat branches and the staff departments; maneuvers, field operations, tactical engagements and strategy; logistical support; national military policy; and individual military characters in all levels of service.

The military subject matter is 18 per cent of the total text. By obvious corollary, 82 per cent is on other affairs. Galdós has made an artistic blend of these two components. The blending is by no means uniform. In two of the novels, the ratio rises to almost one-half military. In several, it dwindles down to occasional passages. The author has gauged his use of military material proportionately to the nearness and intensity of the war action and to the fictional needs of the plot.

Passages treating of war and armies have an authentic quality. They are consistent with Spanish history: they *are* history supplemented by consonant action of fictional characters worked into the scenes. And those scenes are realistic: varied social milieus, campaign vistas, destruction, and atrocities of war are included. Characters are lifelike and as diverse as society; often the author looks into them as psychological studies. Military men are numerous. He portrays, in some of them, convincing psychiatric cases as a by-product of war. To his occasional heroes Galdós gives credit due but withholds glorification. His work is a scrutiny of Spanish society and its members, at war and in its aftermath. He is penetrating and critical, but his tone is tolerant. From a military, as from a human standpoint, his action rings true. Views and opinions which he voices are sound.

In the structure of his works, such materials as happen to be military in nature are fashioned into the artistic whole, by substantially the same craftsmanship as are his materials of any other nature. He leaves a vivid record of the civil war. He spices with a broad supporting fictional plot, his major theme of Spanish society and its problems during the eighteen thirties. As is true in his other writings, his prose here is habitually simple, affable, direct, and graphic.

His unceasing effort to show the tragedy and futility of wars, especially civil wars, and his denunciation of war as an instrument of national policy for Spain, are the one didactic element with military connotations, present throughout the Series. This idea conforms to the most advanced world thought of our own day.

The great achievement of Galdós here lies in his having delivered to the Spanish people, with adequate and balanced military and other social components, a story of their forefathers and the first Carlist war from which a lesson might be learned and which, above all, they would eagerly read.

SUMMARY

All the preceding considerations unite in establishing clearly that the novels of the Third Series of National Episodes by Benito Pérez Galdós are valid and realistic historical fiction, with an authentic military component which is vital to his enlightened message to his countrymen: Stop fighting one another!

THE RESPONSE TO CORTISONE AND RELATED STEROIDS AND THE DEVELOPMENT OF CORTISONE RESISTANCE IN A CORTISONE-SENSITIVE LYMPHOSARCOMA OF THE MOUSE

by JULIA McCAIN LAMPKIN*

A lymphosarcoma, designated P1798, originating in the thymus of stilbestrol-treated BALB/c male mouse was found to be highly sensitive to cortisone through 12 transfer generations. These striking growth-inhibitory effects of cortisone on the lymphosarcoma, P1798, are manifested by the suppression of growth in the subcutaneously inoculated tumor, the inhibition of ascitic tumor cell growth, and the regression of established subcutaneous and ascitic tumor populations. Not only can the effects of cortisone inhibition be appreciated by growth-measurement studies, but they are also reflected in survival time. Cortisone prolonged the life of animals bearing this neoplasm when given either immediately following tumor inoculation or after the tumor had obtained a considerable volume. When treated for only 12 days with 25 mg/Kgm of cortisone, eight mice in the second transfer generation did not develop progressively growing tumors and have survived for over 300 days.

Cortisone induced virtually complete regression of established subcutaneous tumors in 3 to 6 days; however, following regression the tumors reappeared. In these experiments the tumor was inoculated subcutaneously into the right flank and allowed to grow until it was approximately 2 to 3 cm^3 in volume, at which time treatment was started. More than one hundred (BALB/c x DBA/2)F_1 mice in the transfer generations studied showed virtually complete regression when cortisone was administered at a dosage of 25 mg/Kgm daily for 5 consecutive days. After 5 days on cortisone tumor volumes had decreased to a negligible size (1 per cent of original measurement) in contrast to the controls in which the tumor volume increased 142.4 per cent during the same period of time. When animals were sacrificed on the 6th day after treatment with cortisone the excised cortisone-treated tumors varied from 20 to 100 mgm (average 54 mgm). The average weight of the control tumors was 5.9 gm.

Established tumors in BALB/c mice treated with 25 mg/Kgm of cortisone decreased to an average of 2 per cent of the original volume in 6 days. In contrast to (BALB/c x DBA/2)F_1 hybrids, the tumors

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in BALB/2 control mice grew faster with an average increase of 426 per cent in volume in 6 days.

A dose regimen of 25 mg/Kgm for the first 7 days followed by 15 mg/Kgm of cortisone was described. Mice treated continuously with cortisone received 25 mg/Kgm for the first 7 days and 15 mg/Kgm subsequently. It was found that continuous treatment at the 25 mg/Kgm level produced severe weight loss and death. After the initial treatment with 25 mg/Kgm for 7 days, animals have tolerated 15 mg/Kgm for periods of 60 days or more without signs of severe toxicity.

A cortisone-resistant line of P1798 was developed at transfer generation three from the subcutaneously transferred line by means of intermittent treatment of an established tumor. Beginning with the 18th day following the inoculation of tumor cells, cortisone was administered for 2 days at a dosage of 25 mg/Kgm at the end of which time the established subcutaneous tumor had regressed almost completely. However, by the 25th day the tumor showed signs of regrowth, and cortisone was given again during the 26th and 27th days. In the ensuing 6 days, following an immediate regression, the tumors again increased in size. This process of cortisone-induced regression followed by regrowth was repeated four times, the cortisone treatments being given on days 34 and 35, 42 and 45, 55 to 59, and 65 to 66. The two treatment schedules before the last were prolonged because the tumor failed to respond as rapidly as before. Following the treatment on the 65th and 66th days the tumor increased in size in the presence of cortisone. Tumors of the resistant sublines on the maximum dose schedule of 25 mg/Kgm increased in volume at a rate comparable to tumors in the untreated controls, regardless of the beginning of cortisone treatment. This is in striking contrast to the response of the sensitive established subcutaneous grafts which uniformly decreased to 1 per cent of their original volume on the 6th day following treatment. Cortisone at a dosage of 25 mg/Kgm did not significantly prolong the life of mice with P1798 resistant subcutaneous line.

Ascitic lines were developed which responded in the same manner as the established subcutaneous grafts by undergoing profound regression following administration of cortisone in the sensitive ascitic line and no regression in the resistant ascitic line.

ACTH given to mice bearing established subcutaneous tumors at a dosage of 1 mg/day did not influence the growth of P1798 and did not cause an essential change in tumor weights.

A comparative study of the effect of steroids related to cortisone on mice bearing P1798 was made to determine which was most potent. Prednisone was the most potent drug and was effective in inhibiting the growth of P1798 at a dosage of 2.5 mg/Kgm. Prednisolone was similar in response to prednisone but not as potent. Cortisone was slightly more potent than hydrocortisone. Corticosterone was only slightly effective in causing regression of established tumors. 11-Dehydro-corticosterone was relatively inactive.

Experiments comparing the activity of prednisone with cortisone showed prednisone caused a more striking regression of P1798 sensitive line than did cortisone in the ascitic line. Furthermore, studies with the resistant subline showed a lack of response to prednisone, indicating cross-resistance in both the resistant to cortisone-ascitic line and subcutaneous line. Prednisone at a dosage of 25 mg/Kgm/day did not regress established tumors in the resistant to cortisone line.

Preliminary data indicate that 9 alpha fluoro hydrocortisone acetate may be more effective than any compound yet tested. Preliminary data show that there may be only slight cross-resistance with 9 alpha fluoro hydrocortisone and the cortisone-resistant variant, even though this new compound was more active than cortisone.

The desoxycorticosterone acetate (DOCA) stimulatory effect of the lymphosarcoma P1798 has been demonstrated in established subcutaneous growths and ascitic populations in both the sensitive and resistant variants of P1798. Within 6 days DOCA stimulated the rate of growth of the P1798 lymphosarcoma 106.4 per cent greater than the normal growth of the controls with P1798 sensitive line. It was observed that when cortisone and DOCA were administered simultaneously at 25 mg/Kgm the tumors regressed. The effect of DOCA was probably due to a direct stimulatory effect of the drug because: (1) the ascitic population was increased and (2) preliminary data in the established subcutaneous tumors treated with DOCA indicated the water content was the same in DOCA and controls.

Amethopterin profoundly inhibited the growth of the resistant as well as the sensitive line of the neoplasm P1798.

Combinations of cortisone and antimetabolites have more powerful inhibitory effects on P1798 than either alone.

A DETAILED ACTION SPECTRUM OF THE FIRST-POSITIVE PHOTOTROPIC TIP-CURVATURE OF *AVENA*

by WALTER ALLEN SHROPSHIRE, Jr.*

Phototropism is the orientation of growth as a result of a unilateral stimulus of radiant energy. The first law of photochemistry states that the incident energy must first be absorbed by a photoreceptor pigment system. The energy is then either utilized directly or transferred to another metabolic system to establish the differential growth rate necessary for orientation. For many years, there has been a debate in the literature concerning the identity of this photoreceptor.

When the upper 0.5 cm of oat coleoptiles are irradiated unilaterally with relatively low energies, positive (toward the source) tip-curvatures are easily discernible at the end of 30 minutes. After 90 minutes in the dark, the curvatures are approximately 25 degrees for an incident energy of 1.0 microjoule/cm^2 given over 15 seconds at 445 mμ. If higher incident energies are used, the curvatures decrease to zero, become negative, and finally positive again. If the entire seedlings are irradiated, a second complicating base curvature is also observed. The low irradiance tip-response is known as the first positive tip-curvature.

One of the best methods of determining the nature of the photoreceptor is to measure the spectral sensitivity of the photoresponse. Precise determinations are made of the energy necessary to produce a constant response for narrow band-widths of incident energy. From these values the reciprocal of the moles of incident quanta can be calculated. The reciprocal at each wavelength plotted versus wavelength is the action spectrum and corresponds closely to the absorption spectrum of the photoreceptor.

Previous workers found maximum spectral effectiveness in the blue and violet. Most of the action spectra indicated a double peak in the visible, and it was generally accepted that a carotenoid was the photoreceptor. About 1950, it was pointed out that a flavin might work just as well, since it was known to photoinactivate indoleacetic acid and to have an absorption spectrum which is very similar to that of carotenoids in the visible. A large amount of data accumulated in favor of each pigment. However, in the near-ultraviolet the absorption of the carotenoids decreases to a minimum while the flavin absorption rises to a second maximum. Therefore, a detailed action spectrum in the near-ultraviolet should resolve the nature of the photoreceptor.

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For this purpose, a large grating monochromator, employing a 100 x 100 mm Bausch and Lomb plane grating, blazed for the ultraviolet, was constructed at the Smithsonian Institution. A one-kilowatt dc carbon arc was used as a source. With aqueous dye solution filters and the monochromator used in tandem, it was possible to obtain a 20 cm wide, uniformly irradiated field of less than 10 mμ band-widths, with scattered energy less than 0.1 per cent. The grating was rotated by a sine-linkage, coupled to a mechanical counter. The counter was calibrated against the line spectrum of mercury and enabled the wavelength to be read directly in millimicrons.

The plants were grown in a room maintained at 25.0±0.5° C and 85–95 per cent relative humidity. The experiments were carried out in the same room under a green safelight, which produced no phototropic curvature after 2 hours of continuous exposure. *Avena* seeds, var Victory 2020, were husked, soaked 1 hour in distilled water, and imbedded on 1 per cent distilled water-agar slants in test tubes. They were grown for 48 hours under 10 microwatts/cm^2 red (625–1000 mμ) to inhibit first internode elongation and then transferred to a dark cabinet for 17 to 22 hours. Seedlings of uniform straightness and length were placed in wooden blocks, and the upper 0.5 cm of the coleoptiles were irradiated for 30 seconds with four or five irradiances at each wavelength. Shadowgraphs were made immediately after irradiation and at the end of 90 minutes. The curvatures were measured to the nearest degree.

The action spectrum was determined from 350 to 520 mμ using 10 mμ steps, with 5 mμ steps in the peak regions. The curvature in degrees (Θ) versus the logarithm of the incident energy (E_1) in nanojoules/cm^2 (10^{-9} joules/cm^2) was described approximately by a straight line from 3 to 30°.

$$\Theta = m \log E_1 + b$$

where m = slope constant
b = intercept constant

The reciprocals of the moles of incident quanta for 10, 15, and 20° responses were calculated and plotted versus wavelength. Maxima occur at 370–375, 445 and 475 mμ, with a shoulder at 430 mμ.

The action spectrum suggested at first the possibility of a single complex molecule having absorption in both regions. However, a calculation of the ratios of curvatures for equal quantum energies at the wavelength maxima 370, 445, and 475 mμ showed that the peaks in the visible were due to a single pigment, while the near-ultraviolet peak was due to a second photoreceptor. It was found that the utilization of energy in the near-ultraviolet increased as the incident energy increased and that the threshold energy in the near-ultraviolet (91 nj/cm^2) was greater than in the visible (51 nj/cm^2). These two facts suggest that the near-ultraviolet peak is caused by a second photoreceptor.

One of the photolysis products of riboflavin is lumichrome (6, 7-dimethyl-alloxazine). It has high absorption in the near-ultraviolet around 360 mμ, with relatively low absorption in the visible at low pH (4-5). Moreover, lumichrome fluoresces strongly in the visible from 420 to 500 mμ. Thus, irradiation at 370 mμ could be absorbed by lumichrome, emitted as fluorescent energy in the blue, and reabsorbed by a carotenoid to cause phototropic curvature. This would explain the differences in threshold energy, the increase in effectiveness as the incident energy is increased, and the ultraviolet maximum of the action spectrum.

A rough calculation of the magnitude of the absorption coefficients in both regions was made from the known concentrations of flavin and carotenoid present in the tip and the experimental values of b. At 445 mμ, μ is approximately 0.72 x 10^8 cm^2/mole and at 370 mμ, approximately 8.7 x 10^6 cm^2/mole. These agree extremely well in magnitude with the molar extinction coefficients of a carotenoid, such as lutein (3.0 x 10^8 cm^2/mole) and of lumichrome (10.0 x 10^6 cm^2/mole).

In conclusion, a detailed action spectrum of the first positive tip-curvature of *Avena* has been determined. Quantum responsivity maxima occur at 370–375, 445 and 475 mμ, with a shoulder at 430 mμ. Evidence is presented which indicates that the action spectrum is due to the absorption of two yellow pigments.

THE EFFECT OF DRUGS ON THE DISTRIBUTION OF Cx-REACTIVE PROTEIN AND SIALIC ACID IN RABBIT SERUM

by NICHOLAS MICHAEL CAMBOSOS *

In 1930 Tillet and Francis first noticed the reaction between the somatic C polysaccharide of pneumococci and the serum of humans with acute rheumatic fever. It was found that the precipitin for this carbohydrate was an abnormal protein designated as C-reactive protein (C-RP). Subsequent investigations showed that the abnormal protein also appeared during the acute phase of other inflammatory diseases or when there was tissue breakdown. It was found that the appearance and disappearance of C-RP in the blood closely followed the rise and fall of the erythrocyte sedimentation rate, the intensity of pain and swelling in joints, and the onset and departure of other clinical symptoms of the rheumatic process. The detection of C-RP in the blood was looked upon as a possible indicator of the inflammatory process, especially in the diagnosis and therapy of rheumatic diseases. However, there was one drawback with the use of C-RP as an indicator of the rheumatic process. C-RP disappeared from the blood before there was complete remission of the inflammatory process so that subclinical courses of the disease went undetected.

In 1948 Niazi and State announced that the blood of humans contained a substance which gave a characteristic color reaction with diphenylamine and that the concentration of this diphenylamine sensitive material increased during rheumatic fever. This substance was found later to be one of the sialic acids. Serum sialic acid concentrations increased at or slightly after the acute phase of an inflammatory disease in a manner roughly parallel to the appearance of C-RP, and then slowly returned to normal with remission of the disease. This slow return to normal of sialic acid concentrations extended beyond the time required for C-RP to disappear from the blood. Measurement of sialic acid concentrations in serum was advocated as a means of following the course of subclinical inflammation but there was difficulty in deciding what the normal concentration was for any one particular individual.

In 1951 Anderson and McCarty detected an abnormal protein in the serum of rabbits during an acute phase of an inflammation. Since this abnormal protein was detected by an undegraded form of the somatic C polysaccharide of pneumococci, Cx polysaccharide, and since it had many of the properties of C-RP, this protein was named Cx-reactive protein (Cx-RP). This abnormal protein was induced to appear in the serum of normal rabbits in 1953 by Wood upon the intracutaneous injection of an

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adjuvant made of water, mineral oil, and Aquaphor (an ointment base). The Cx-RP produced in this way was no different from that found in the blood during an inflammatory disease.

In 1954 Coburn and Haninger produced elevations in the concentration of serum sialic acid in the guinea pig by an artificial anaphylactic injury to one of the joints. When the pain, swelling, and tenderness of the joint regressed, the concentrations of serum sialic acid returned toward normal. This animal preparation was offered as a model for the study of compounds for their antirheumatic activity.

It was concluded from the findings presented above that one animal in which both of these symptoms of the inflammatory syndrone were induced to appear by artificial means would be a better model for the study of the anti-inflammatory activity that substances might possess. An experiment was designed in which rabbits were treated with Aquaphor. Chemical and serological tests on the serum of these animals indicated that not only did Cx-RP appear in the serum of these animals but that the concentrations of serum sialic acid were elevated. These phenomena were observed in the sera of all the animals tested.

The sera of these rabbits was fractionated electrophoretically and the fractions checked for the presence of Cx-RP and sialic acid. It was found that Cx-RP appeared in the alpha and gamma globulins and that sialic acid was associated with the alpha and beta globulins. The distribution of these compounds in rabbit sera was similar to the distribution of C-RP and sialic acid in human serum. It was decided that a single dose course of antirheumatic drugs should be administered to the Aquaphor treated animals.

The results with the drug treated animals were not unexpected. In all cases where the drug was coadministered with the Aquaphor, elevations in the concentrations of sialic acid and Cx-RP failed to attain those reached in animals treated with Aquaphor alone. In one case where the drug was given after the Aquaphor, the levels of Cx-RP and sialic acid fell after an initial rise. These findings were almost identical to the events that occurred when humans with an inflammatory disease were treated with antirheumatic drugs.

Electrophoretic fractionation of the serum of Aquaphor treated animals after drugs had been administered produced more new results. One of the first events evident in the animal sera after salicylates were given was a decrease in the per cent of Cx-RP found in the alpha globulins. Later, the gamma globulin levels of Cx-RP fell off while those in the alpha globulins increased. Still later the levels of Cx-RP in both fractions were elevated. With phenylbutazone and cortisone acetate the effect was even more pronounced for no Cx-RP appeared in the serum after the drug was given.

The distribution of serum sialic acid also appeared to change after antirheumatic drugs were administered. This was most clearly evident after the administration of cortisone acetate. The fraction in which the concentration of sialic acid was depressed was that associated with the alpha globulins. As the effect of the drug wore off, the concentration of alpha globulin sialic acid increased.

The disappearance of Cx-RP and the decrease in the concentrations of serum sialic acid after the administration of known antirheumatic drugs in Aquaphor treated rabbits appeared to parallel the findings in humans with rheumatic fever during and after the administration of antirheumatic drugs. For this reason it was concluded that the Aquaphor treated rabbit displayed symptoms similar to several nonspecific symptoms found in humans with an inflammatory disease. On this basis the Aquaphor treated rabbit is offered as a limited model of an inflammatory syndrome suitable for the preliminary studies which investigate the anti-inflammatory activity that compounds might possess.

SOCIAL INSURANCE IN AN EXPANDING ECONOMY, 1935—1980

by ROBERT SPENCER DAVID *

As an instrument for stabilizing family and national income, the hundreds of loosely coordinated social insurance programs have fundamental limitations. They neglect large segments of the labor force and several common threats to family income—mainly those arising out of non-occupational sickness and injuries. Although they increasingly affect the growth and stability of the national economy, they are not generally guided by national economic policies. Many of the state programs have been distorted into weapons for interstate competition. Furthermore, all existing social insurance programs are financed by taxes on payrolls and/or wages which are shifted among businesses, workers, and consumers in a highly obscure manner with little regard for their economic effects.

The underlying aim of this paper is to appraise the quantitative impact of potential social insurance expansion on the national economy up to 1980. This appraisal proceeds on the basis of two hypothetical social insurance systems that are related to a projection of the gross national product. A limited system is based on existing policies. A universal, comprehensive, and integrated system is aimed at protecting all regular income earners and their families against the basic risks to family income—old-age, death or disability of the family breadwinner, unemployment, and family health and medical expenses. Both systems are assumed to be coordinated with a broad public assistance program that provides minimum income protection for people who cannot qualify for social insurance benefits. Social insurance benefits are graduated from a subsistence level to a maximum somewhat below the average wage level. Hypothetical benefit formulas, like many existing formulas, are weighted in favor of low-income families.

The redistributive effects of the benefit programs are partly offset by regressive tax programs. Both of the hypothetical social insurance systems are financed by a flat-rate tax on all types of personal income, except transfer payments. In systems with almost universal coverage of income earners, there would be little justification for exempting personal income from profits, rent, interest, and dividends. However, the tax exempts income above a specified level because of benefit limits. Tax rates are calculated to balance social insurance accounts under full-employment conditions. In 1980 the tax rate for the limited system is 8 per cent, compared with 15 per cent for the comprehensive system.

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With accounts balanced at full employment, social insurance has no direct impact on the level of disposable personal income. Deficits develop on a downswing, however, to offset the decline of personal income. On an inflationary upswing, surpluses develop to restrain the rise of personal income. Counter-cyclical deficits and surpluses under the limited system would offset about a quarter of deviations in personal income resulting from under employment or over employment. The comprehensive system would offset about half of these deviations.

At all times the hypothetical systems would redistribute personal income from upper to lower-income groups. In 1980 under full-employment conditions, the limited system would redistribute 5 per cent of the Nation's personal income compared with 10 per cent for the comprehensive system and only 3 per cent for all programs in 1956. This redistribution of income would not indicate the extent to which specific families would be subsidized because of the shifting of families between income groups over several decades. Individual equity cannot be calculated precisely under these systems.

A social insurance system may be designed to support basic economic policies as well as social policies. By redistributing purchasing power over the business cycle and among income groups, social insurance can promote the stable growth of aggregate demand. At the same time, it can contribute to a more efficient use of the labor force. On the other hand, social insurance expansion may undermine economic individualism and discourage personal saving. Since continued social insurance expansion appears inevitable, there are strong reasons for coordinating social insurance and economic policies. A social insurance system that reflects individual differences in income and general productivity gains seems particularly appropriate for the United States.

A STUDY OF THE PREPARATION AND PROPERTIES OF SOME MODIFIED PROTEINS: I. GUANIDINATION OF INSULIN; II. NITROGUANIDINATION OF HUMAN AND BOVINE SERUM ALBUMIN

by ROY LESTER EVANS[*]

A guanidinated derivative of insulin was prepared (Part I) by reacting crystalline zinc insulin with O-methylisourea at pH 10 for 7 days at 5° C.

The Moore and Stein analytical ion-exchange chromatographic technique was applied to an acid hydrolysate of the modified insulin. The results indicated the ε-amino group of lysine in insulin had been quantitatively converted to the guanidino group by the reagent to form the homoarginine residue. Of the two N-terminal α-amino groups in insulin that are theoretically available for reaction with O-methylisourea, glycine was guanidinated only to the extent of 50 per cent. No evidence could be found for the guanidination of the N-terminal α-amino group of phenylalanine in the ion-exchange chromatograms.

Guanidinated and native insulin were reacted with the Sanger reagent, 2,4-dinitrofluorobenzene. In a quantitative comparison of the DNP glycine and DNP phenylalanine recovered from the native and guanidinated insulin, it was found that the guanidinated insulin yielded an amount of DNP glycine 60 to 62 per cent of that found from the native insulin. The amount of DNP phenylalanine obtained from the guanidinated insulin was 78 to 97 per cent of that given by the native protein. These data indicate that approximately half of the α-amino group of glycine was guanidinated in insulin before the treatment with 2,4-dinitrofluorobenzene. If any of the α-amino group of phenylalanine had reacted with O-methylisourea, it was only to the extent of 10 per cent or less.

This extent of guanidination of insulin did not affect its hypoglycemic activity as determined by an *in vivo* microassay performed on alloxan-diabetic hypophysectomized mice. The technique of measuring the increment in glycogen deposition in the rat hemidiaphragm in response to insulin was also used. No significant difference between the activity of the native and modified insulin could be found with this test.

The solubility of insulin upon modification was decreased slightly over the range of pH 3.5 to 7.5 in 0.1 M NaCl plus $\mu = 0.1$ buffer.

Guanidinated insulin sedimented in a single symmetrical boundry in the ultracentrifuge similar to that of the native insulin.

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The guanidinated derivative of insulin was obtained in crystalline form by refrigerating a 1 per cent solution of the protein in 0.2 *M* NaCl at pH 1.92 for a period of 2 to 3 weeks.

Bovine and human serum albumin were reacted with 2-methyl-1(or 3)-nitro-2-thiopseudourea (Part II). This reagent reacts with the protein to convert the amino group to the nitroguanidino group.

The rate of reaction of the reagent with albumin rapidly increases with pH. It was found that at pH 9 only partial substitution was achieved under the conditions employed. By re-nitroguanidinating albumin at pH 9 a number of times a derivative was obtained in which 40 groups were found to be modified.

Reaction of the nitroguanidinating reagent with amino acids produced crystalline products in good yield. The nitroguanidinated derivatives of amino acids as well as the modified protein derivatives exhibit a characteristic ultraviolent absorption at 269-270 mμ. This provides a tool for the estimation of the degree of substitution of the amino groups in the protein by the nitroguanidino groups.

The solubility of human serum albumin decreased on nitroguanidination with a shift in the isoelectric point to a more acid pH due to the removal of part of the positively charged groups.

In the ultracentrifuge, the modified proteins sedimented in a pattern similar to the native protein.

Attempts to evaluate the number of amino groups modified in the protein by the Van Slyke manometric procedure were without success. In almost all cases nitrogen values were obtained which were 20 to 30 per cent higher than the control samples.

Preliminary studies were carried out on the immunochemical properties of an albumin sample in which 40 groups were calculated to be modified. The results indicate that this extent of nitroguanidination had little or no effect upon its antibody-combining properties.

STUDIES ON FAT METABOLISM IN YOUNG MALE RATS EXPOSED TO COLD

by DONALD FRANKLIN FLICK *

The metabolism of fat at normal environmental temperatures has been investigated extensively. Reports from various laboratories have attempted to correlate the development of ketosis with the composition of the previous diet. One of the early workers to suggest the importance of a balanced intake of protein, carbohydrate, and fat was Shaffer who in 1923 proposed that a metabolic product of acetoacetic acid be combined with a derivative of glucose in the final stages of fatty acid oxidation. This concept led to the postulate that substances convertible to glucose were antiketogenic. These ideas were embodied in the ketogenic-antiketogenic theory for the development of ketosis.

Later workers investigated ketosis in nutritional studies but differed in their interpretations of the effect of previous diet on ketosis in either the fed or fasting state. MacLean and co-workers in 1937 noted that the rate of ketone body excretion was increased in fasted rats which were previously fed a high fat diet. Deuel and collaborators in 1937 related the ketonuria of fasting to the amount of fat in the liver above the element constant. Drury, Wick, and MacKay in 1941 and Tidwell and Treadwell in 1946 found a correlation between the degree of ketosis and the protein content of the previous diet. From the reports in the literature, it is seen that the relationship between dietary composition and subsequent ketosis are not fully understood.

A number of workers have studied the nutritional requirements of animals exposed to cold. Sellers, You, and Moffat in 1954 found that rats in the cold ate more food, consumed more calories, and gained less weight than controls maintained at room temperature. Treadwell and co-workers in 1955 reported similar results but noted that cold had both a preventive and curative effect on fat fatty livers which had been caused by high fat hypolipotropic diets. A further observation was that cold was not effective in decreasing the fat of cholesterol fatty livers induced by feeding a diet to which cholesterol was added.

This dissertation reports some aspects of fat metabolism in the young male rat at environmental temperatures 24° and 1°. Data were obtained on growth, food intake, and calorie consumption on four levels of dietary fat: 4, 20, 40, and 60 per cent by weight. The general observations made were that rats fed four weeks in the cold gained less weight, ate more food, and had a greater calorie intake than room temperature controls. It was found that food and calorie intakes, at both temperatures, were proportional to the dietary fat content. When the dietary

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carbohydrate : fat calorie ratio was 8.7 : 1.0, maximal growth (expressed as per cent gain in body weight) was obtained in rats exposed to cold, while a ratio of 1.4 : 1.0 yielded maximal growth at room temperature. Growth was inhibited at 24° by the diet containing 60 per cent fat while the rats fed this diet at 1° grew better than the room temperature controls.

Three phases of ketonemia were studied: daily ketonemia for the first week on the four diets, weekly ketonemia for twenty-eight days, and fasting ketonemia for four days. The animals exposed to cold developed a higher ketonemia than the animals fed at room temperature at the daily intervals of the first week and also at the weekly intervals for four weeks. The effects of diet and temperature on the ability of the young rat to utilize injected ketone bodies were studied on the last day of the feeding period. It was found that high levels of fat ingestion and exposure to cold increased the tolerance to exogenous ketone bodies, which indicated that cold and dietary fat augmented the ketone body oxidation mechanisms of the extrahepatic tissues.

The liver lipides of rats were fractioned before and after fasting. In the pre-fast livers, it was found that cold functioned as a lipotropic agent against neutral fat. The effect of fasting on liver lipides was most marked in decreasing the neutral fat fraction. The participation and utilization of the liver lipide fractions in the process of ketone body formation in fasting animals are discussed.

A STUDY OF THE PURINE AND PYRIMIDINE BASES IN CULTURES OF *ENTAMOEBA TERRAPINAE*

by VERNON JACK FULLER *

In this study, cultures of *Entamoeba terrapinae,* substrain 100, a species representative of the genus *Entamoeba* and cultures of the associated bacterial flora were examined for the purine and pyrimidine bases characteristic of nucleic acids commonly found in animal, plant, and bacterial cells.

Two main types of nucleic acid have been described in the literature. One type, desoxyribose nucleic acid, occurs in the nuclei-like particles of bacteria and fungi and also in the nuclei of higher animal and plant cells. On hydrolysis, desoxyribose nucleic acid yields the purine bases, adenine and guanine; the pyrimidine bases, cytosine and thymine; a sugar, d-2-desoxyribose; and phosphoric acid. The second type of nucleic acid, ribose nucleic acid, occurs in the cytoplasm and nucleolus of animal, plant, and bacterial cells. On hydrolysis, ribose nucleic acid yields the purine bases, adenine and guanine; the pyrimidine bases, cytosine and uracil; a sugar, d-ribose; and phosphoric acid.

Amoebae, being in the animal kingdom, should contain desoxyribose nucleic acid as do other animals. However, parasitic amoebae seem to be an exception because desoxyribose nucleic acid cannot be demonstrated in the nuclei by the classical Feulgen staining technique. The amoebae have been studied by few investigators and such studies as have been made have given contradictory results.

In view of these confusing cytochemical results, it seemed desirable to employ other chemical techniques, such as paper chromatography and spectrophotometry, as a means of determining the presence of desoxyribose nucleic acid in cultures of *Entamoeba terrapinae.*

After subjecting cultures of the organisms to two cycles of freezing and thawing, microscopic examination of the material obtained revealed no recognizable fragments of amoebae. The resulting material was centrifuged and then subjected to nuclei isolation procedures. No nuclei were observed. Therefore, it was assumed that essentially all of the nuclear material was present in the supernatant fluid. The nucleic acids were then removed from the supernatant fluid by employing the trichloroacetic acid method of Schneider.

Aliquots of the nucleic acid fractions were examined spectrophotometrically for the two types of nucleic acid. Ribose nucleic acid was detected in all preparations by employing the orcinol reaction. Desoxyribose nucleic acid was not detected in any preparations by utilizing the Dische reaction. It was not surprising that desoxyribose nucleic acid was absent in the bacterial fractions, although the acid has been shown to be present in all bacteria studied, since the freezing and thawing cycles were limited to two. This work is in agreement with other investigators who have shown that at least fifteen cycles of freezing and thawing are required before bacteria show microscopic evidence of disintegration.

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* B.S. 1951, University of Maryland; M.S. 1953, The George Washington University; Ph.D. conferred June 4, 1958. Professor in charge of research: Angus MacIvor Griffin, *Professor of Bacteriology.*

The remaining portion of the nucleic acid fractions were evaporated to dryness. The dried nucleic acid fractions were hydrolyzed to the respective purine and pyrimidine bases by 12 N perchloric acid at 100 C for one hour as suggested by Marshak and Vogel.

The nucleic acid hydrolysates were then subjected to paper chramatography. This technique was chosen because paper chromatography has been proven a highly successful method of separating the purine and pyrimidine bases in small amounts of nucleic acids.

By employing descending paper chromatography and the isopropanol-hydrochloric acid solvent system of Wyatt, the bases were resolved after 18 hours at 30 C.

The purine and pyrimidine bases were detected on the paper strips by their absorption of ultroviolet light. The areas of interest were marked, cut out, and the material eluted from the paper with 0.1 N hydrochloric acid. The elution period was shortened by shaking for one and one-half hours. The eluates were then examined spectrophotometrically. Readings were made in the wave length range of 240-290 millimicrons.

The criteria used for the identification of a base detected in the amoebic and bacterial nucleic acid fractions were:

1) The maximum wave length as compared to that of the respective known commercial base

2) The Rf value as compared to a standard run under the same conditions

3) The ratios of absorption at selected wave lengths as compared to a standard run under the same conditions and to those previously established.

The hydrolysis and elution techniques were validated using commercial purines, pyrimidines, and nucleic acids.

The bases characteristic of ribose nucleic acid derived from other sources were found: adenine, guanine, cytosine, and uracil.

The pyrimidine bases thymine and 5-methylcytosine were not detected in any preparation.

The amount of purine and pyrimidine bases observed in the hydrolyzed nucleic acid fractions were consistent in four of the five preparations derived from the amoebic cultures. The purine bases adenine and guanine were present in greater amounts than were the pyrimidine bases cytosine and uracil. The ratio of purine bases to pyrimidine bases was observed to be approximately 2:1.

In the case of the bases observed in the hydrolyzed nucleic acid fractions derived from cultures of the associated bacterial flora, the pyrimidine bases cytosine and uracil were found to be predominant.

The absence of desoxyribose nucleic acid in the amoebae studied presents the possibility that the ribose neucleic acid found may be unique and be responsible for the transfer of genetic information. However, the possibility should not be overlooked that desoxyribose nucleic acid may be present in such a minute amount that it defies detection or that it is detectable only in certain phases of development.

It is also possible that the ribose nucleic acid isolated is of a special type and contains some physiological properties of each of the two types of nucleic acids. This possibility is in line with the concept advanced by several investigators.

Theories as to the function of ribose nucleic acid are based on circumstantial evidence and await perhaps better methods of nucleic acid isolation and the designing of more decisive experiments for examining the chemical and physiological properties of ribose nucleic acid. Such investigations may show that ribose nucleic acid does play an important genetic role.

GROWTH OF EQUINE ENCEPHALOMYELITIS VIRUS IN MONOLAYER AND SUSPENDED CULTURES OF L CELLS

by FRANK MERRIL HARDY[*]

It is the primary purpose of this investigation to report on the kinetics of growth and cytopathology resulting from the cell-virus interaction involving Venezuelan equine encephalomyelitis (VEE) virus and Earle's "pure" line L cell strain. Initially, this problem was concerned solely with VEE virus growth in conventional monolayer cultures; however, since the suspended tissue culture system was more convenient for certain purposes, data were accumulated on VEE virus growth as a function of both these systems. A review of the articles concerned with VEE virus in tissue culture systems has shown that the growth of this "neurotropic" virus can be supported by a number of extra-neural tissues including: chicken embryo, human uterus, and the HeLa cell.

A survey of various tissue cultures was undertaken to select a suitable host which would show a high susceptibility to VEE virus and yield high titers in a reasonable time. Eight monolayer cell cultures consisting of first-passage embryo chicken and mouse (lung), adult guinea pig and monkey kidney, and standard cell lines: Maben, L, human conjunctiva, and liver were screened for VEE susceptibility. All tissue cultures tested support VEE virus growth. Chang human conjunctiva cell strain, however, supported growth of virus when 10^4 but not 10^2 mouse intracerebral (MIC) LD$_{50}$/ml were introduced into the culture. Observations of living cultures, or of fixed and stained cells, showed that the virus induced a cytopathogenic effect (CPE) in human liver and monkey kidney beginning after the peak titer. The L cells showed a CPE after peak titer also, but not when inoculated with 10^2 MIC LD$_{50}$/ml although a peak titer approaching that induced by the higher inoculum was evident. The conjunctiva cultures showed little or no CPE regardless of test inoculum.

The L cell was selected after additional exploratory and confirmatory experiments to carry out the objectives of this work for the following reasons: (1) it was highly susceptible and yielded high titers even with low virus doses; (2) a decided CPE as a result of infection occurred with appropriate doses; (3) the cell population underwent rapid growth and was conveniently maintained; and (4) since the population represented the progeny of a single cell isolation, it was highly probable that all cells were uniformly susceptible to VEE virus infection. This proved to be the case.

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Various media and nutrient additives were compared in order to select an appropriate L cell growth medium. A nutrient medium, i.e., 199, containing 20 per cent horse serum (199_{80} HoS_{20}) was found to support excellent growth of L cells.

An experiment to determine the threshold dose necessary for infection of these cells showed that a dose as low as 1 MIC LD_{50} could infect a monolayer L cell culture.

An experiment was performed to compare the suspended L cell culture system with the results already obtained for the infected monolayer L cell culture system. Results of this experiment showed that VEE virus titer yields in the suspended culture system were comparable to the monolayer cultures discussed previously both in virus yield and the duration required to attain this maximum. The results, however, showed a drop in titer in the 10^2 MIC LD_{50}/ml inoculated culture which was more rapid than that in the 10^4 inoculated culture and strongly suggested an inactivation of virus due to pH drop. When the pH was controlled, the inactivation of virus was minimized.

With respect to inactivation of VEE virus, the following environmental factors were studied: (1) the rate of thermal inactivation of the virus at 37 C under both stationary and agitated culture conditions; (2) the rate of virus inactivation at certain hydrogen ion concentrations (necessary for cell growth); and (3) the rate of virus inactivation at −55 C.

Results of these individual studies have shown: (1) that about 1-log decrease in titer per 16 hours and 1 log in 9 hours occurred at a temperature of 37 C under stationary and agitated conditions, respectively; (2) that even a more rapid decline in titer occurred through lowered pH and/or virus diluent; and (3) that the virus was stable at −55 C for 6 months.

One-step type growth curves of VEE virus were performed in monolayer L cell culture.

A slight decrease in the supernatant titer indicated that an eclipse phase may have occurred during the first 4 hours of 37 C incubation. Further investigations of this phase were performed in the suspended culture system. An exponential growth phase next occurred which culminated at a peak titer of $10^{9.2}$ MIC LD_{50}/ml in 12 to 16 hours; high titers were prevalent until after 68 hours. In view of the thermal inactivation rate, the latter results suggested a long, continuous virus release period. An experiment was carried out to investigate this further. By washing out excess supernatant virus at 12-hour intervals after the peak virus titer, subsequent 37 C incubation showed renewed virus growth after each washing. Thus, after the peak titer is attained, infected cells release virus continuously.

The cytopathogenic effects induced in monolayer L cell cultures due to

VEE infection were not observed at the peak titer, but appeared relatively late in the constant release phase. The cytopathology was first manifest as a slightly rounding up of cells about 12 hours after the maximum virus yield. During each additional 12-hour period of incubation, progressive degenerative changes in the culture occurred, including a decrease in the staining intensities of the nuclear membrane and cytoplasm, cytoplasmic vacuolization, nuclear pycnosis, and increasing amounts of cellular debris.

A suspended L cell culture was infected to determine virus yield and cell counts in order to compare the virus yield and cytopathology with those of the monolayer system. Results of this experiment showed that the cell counts dropped as the cytopathology increased. At maximum titers the virus yields per cell were approximately equal for monolayer and suspended cell cultures.

An experiment to demonstrate in the suspended cell system the various growth phases found in monolayer culture was performed. This experiment made use of cell and supernatant titers in addition to the washing out procedure used for demonstration of the constant release phase shown originally in the monolayer system. Results of this experiment have shown an eclipse phase (a decrease in infectious activity) of 3-4 hours at the beginning of 37 C incubation. An exponential increase of intracellular virus accompanied by an exponential increase of extracellular virus occurred until peak titer (about 12 hours). This phase has been termed the phase of *active accelerated growth* and *release*. Relatively constant titers were shown in both supernatant and cell samples from the peak until about the 52d hour of 37 C incubation. These constant titers, however, marked a continuous virus production and release of new infectious virus. The VEE virus growth during this phase was sufficient to balance virus inactivation and, in fact, occurred at a still higher rate if supernatant virus was washed out at any time in this phase. Cytopathology which occurred relatively late in this phase of *constant release* was related to the virus concentration of the initial inoculum. A greater virus concentration was necessary to induce subsequent cytopathology than to induce an infection. Adsorption studies have shown that most of the cells had adsorbed most of the virus in 15 minutes when a high virus MIC LD_{50} input ratio was used.

INTENSITY DIFFERENCE LIMENS FOR NARROW BANDWIDTHS OF NOISE AT VARIOUS PULSE LENGTHS

by RICHARD MORTON MICHAELS *

Previous research on frequency discrimination of narrow bandwidths of noise uncovered a paradox. As the noise bandwidth increased above 8 cps, frequency discrimination deteriorated, as expected, because frequency localization became less precise. However, as the noise bandwidth was decreased below 8 cps, instead of an improvement of frequency discrimination, a further deterioration was observed. These bandwidths have an interesting property: to the listener, the signal appears to wax and wane. That is, their envelopes fluctuate at a rate slow enough to be perceptible. This fluctuation, it was conjectured, might result in poorer intensity discrimination. Now, if frequency discrimination were, in fact, dependent upon intensity discrimination, then the paradox may be resolved. For although frequency localization is improved by bandwidth reduction, intensity discrimination may be degraded, preventing reduction of the frequency DL. One way in which such an interdependence may exist is to assume that the auditory system acts as an envelope detector.

The present study was an attempt to examine intensity discrimination for narrow bandwidths of noise within the framework of this model. If the auditory system were to act as an envelope detector in discrimination, the difference threshold may be predicted by the nature of the envelope variations in the stimulus and by the nature of the model. Assuming the model contains a low pass filter of the order of 6 cps bandwidth, four hypotheses were stated. Each defines how variations in the characteristics of the stimulus envelope would affect intensity discrimination.

The first hypothesis was that for signals with envelopes that are smoothed perceptually, the intensity difference limen will be the same. Thus, for stimulus bandwidths greater than 8 cps the difference threshold should be the same. Consequently, intensity discrimination will be independent of the frequency spectrum of the stimulus.

The second hypothesis was that for signals in which fluctuations in the envelope are perceptible, the intensity difference will rise. These perceptible variations increase the uncertainty of a judgment of intensity differences, thus causing a rise in threshold. Furthermore, the rise in threshold should be greater as the rate of envelope fluctuation decreases.

A third hypothesis was that elimination of envelope variations by reduc-

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tion in stimulus duration will eliminate differences in discrimination among stimuli having different rates of fluctuation.

Finally, a fourth hypothesis was stated, related to the transition from perceptible envelope fluctuation to no variation in the stimulus envelope. In this region only monotonic changes may occur in the envelope. This change should be perceptible and, like fluctuations, increase the uncertainty of intensity judgments. For stimuli with different rates of fluctuation, there is a range of pulse lengths in which this monotonic change will occur. The magnitude will generally be higher in those stimuli with a higher rate of fluctuation. Thus, there should be differences in threshold in this transition region, and stimuli with higher rates of envelope fluctuation should yield intensity difference limens greater than stimuli with lower rates.

In order to obtain the required range of envelope characteristics, filtered random noise was used. By controlling bandwidth, the rate of envelope fluctuation could be varied over a wide range. By controlling pulse length, the number of fluctuations could be varied. Also, by controlling pulse length, envelopes could be obtained which changed only monotonically over the duration of the stimulus.

Four bandwidths of noise centered at 800 cps were used: 0.5, 2, 8, and 32 cps, and also a pure tone at 800 cps. Four pulse lengths were used: 32, 128, 512, 2048 msec. The widest two bandwidths have a fluctuation rate so high that the auditory system cannot follow and therefore smoothes the envelope. However, the envelope of the two narrow bandwidths fluctuate so slowly that their changes are perceptible. For these two, smoothing by the auditory system will be ineffective.

The longest pulse length is sufficiently long for one or more envelope fluctuations to occur for all bandwidths. The shortest pulse length will eliminate any perception of change in envelope for the two narrower bandwidths. The two intermediate pulse lengths will permit the occurrence of monotonic variations in either or both of these narrow bandwidths.

The apparatus for the experiment was composed of a stimulus generation system; a timing and control system; and a measurement system. For the first, two identical normal resonant filters were used. Both had bandwidths which were variable in steps each of which doubled the bandwidth. The center frequency of each was at 800 cps. The output power of both filters was equated by attenuation; switched; and filtered again. After amplification the noise signals were presented to the listener binaurally through headphones.

Timing and control was accomplished using a series of relays. The duration of closure of these relays and the intervals between their operation was adjustable. The interval between two noise pulses was fixed at

250 msec, while the interval between pairs of pulses was fixed at 4 seconds.

In order to determine the decibel difference between pulses, an energy measuring system was developed. The voltage of each pulse of a pair to be compared was squared and integrated. This integrated voltage of the first pulse was stored until the second pulse was integrated. Then the two intergrals were divided. The ratio was then converted into six decibel differences ranging ± 3 db about zero in 1 db steps. Finally, this difference was converted to digital form for storage on punched tape.

The method of constant stimulus differences was used to determine the threshold. The subjects heard two pulses in succession and judged whether the second of the two was louder than the first. Using this forced choice technique, pairs of pulses were presented until at least 30 judgments were obtained for each of the 6 stimulus categories. By determining the proportion of louder judgments for each of the six stimulus classes an ogive was constructed for each subject. The intensity difference limen was defined as the probable error of the fitted distribution. The same procedure was employed to obtain the DL's for the pure tone.

The results of this study generally confirmed the initial hypotheses. It was found at the 2048 msec pulse length that there were no differences among thresholds obtained for the 8 cps and 32 cps bandwidth and the pure tone. This confirmed hypothesis one that where envelope fluctuations were smoothed, the difference limen would be the same regardless of bandwidth. Thus, the intensity difference limen was independent of the frequency spectrum for wide bandwidths of noise. It was the same for stimuli whose envelopes were smoothed by the auditory system and thus equivalent. At the 2048 msec pulse length, however, there was a significant increase in threshold when the noise bandwidth was reduced to 2 cps and an even greater increase when reduced to 0.5 cps bandwidth. Therefore, at 2048 msec, the second hypothesis was validated, namely, that for pulses in which fluctuations were perceptible, the DL would rise inversely with bandwidth.

Analysis further showed that there were significant differences in thresholds among the four bandwidths for 512 and 2048 msec pulse lengths. There were no significant differences, however, among the 4 bandwidths for pulse lengths of 32 and 128 msec. This confirmed the third hypothesis which was when envelope fluctuations in the two narrower bandwidths were eliminated, by reduction of pulse lengths, the differences in thresholds among all 4 bandwidths would also be eliminated.

The intensity difference limens for 8 and 32 cps bandwidth and pure tone decreased exponentially over pulse length which was consistent with similar measurements. For the 0.5 cps and 2 cps bandwidth the variation in threshold over pulse length was very different from the wider bandwidths. In the 0.5 cps bandwidth, the threshold vs. pulse length function was "U" shaped with a minimum in the region of 128-512 msec. Thresholds for the 2 cps bandwidth showed very little change as pulse length was increased; much less than the wider bandwidths.

An apparent minimum in the curve of pulse length vs DL for the 0.5 cps bandwidth was examined in detail. It was found that the thresholds at the intermediate range pulses were lower than the highest and lowest pulse lengths. This trend toward a minimum was explained on the basis of the low envelope slope expected for this bandwidth at these pulse lengths, coupled with little loss in discrimination due to pulse ength alone.

The results of this study suggest that three processes are required for he description of intensity discrimination. One process refers to the fact hat discrimination improves with pulse length. This suggests that pulse ength is analogous to sample size in the sense that the larger the amount f information presented to the system, the more reliable is its discrimina- ion. A second process refers to peripheral smoothing. When the rate f fluctuation is greater than around 6-10 cps, the variations are elimi- ated. It is by this peripheral smoothing that discrimination is the same or wide bands of noise and pure tones. Finally, a third process is a igher order statistical smoothing. This is indicated by virtue of the fact hat discrimination is still possible with perceptibly varying stimuli.

This research generally validates the use of an envelope detector model. he auditory system does appear to operate in a manner consistent with uch a model. The results suggest that the auditory system operates as if were a circuit containing a normal resonant filter having a bandwidth of 0-100 cps. This is followed by a nonlinear element which in turn passes to a low pass filter of 6-10 cps bandwidth. The output of the low pass lter operates a statistical decision process. This detects differences etween the characteristics of the distributions generated by the stimulus cting within the auditory system.

Applying the results of this research to the data on frequency discrimi- ation, does, indeed, lead to the conclusion that frequency discrimination dependent upon intensity discrimination. From the envelope detector odel a linear equation derives in which the frequency difference limen epends upon two variables: the bandwidth of the input filter and the tensity difference limen. Where the intensity DL is constant, as in wide nd noise, the frequency DL rises directly with noise bandwidth. For ise stimuli whose bandwidths are less than 8 cps in which the intensity L rises, so does the frequency DL even though frequency localization is proved by the bandwidth reduction. The only additional requirement r the prediction of frequency discrimination is that detection of differ- ces takes place on that portion of the input filter characteristic having aximum slope.

From the envelope detector model it is possible to suggest certain neurological correlates. By means of the mechanism of reciprocal overlap, the deformation pattern on the basilar membrane may be sharpened. What is especially important is that the gradient of that activity pattern be sharpened in order to obtain a near-discontinuity between active and inactive regions in the central nervous system. For only by detecting changes in rate of neural activity that occur along such a border can precise discrimination occur. Detecting changes in rate of neural activity are, in essence, the detection of changes in intensity. However, in order to obtain a sharp border, a synchrony in neural firing is required, for only through periodic discharge can there be established the inhibition and facilitation required for sharpening. Whenever pulse length is too short or stimulus intensity is too low, there is an insufficient amount and rate of activity to bring these sharpening mechanisms into play.

The neurological processes suggested generally lead to the same conclusion as the analogue. However, the input filter extant in the electrical model appears in the nervous system to be an end product of the neural operation. It seems most reasonable that translation, transmission, and analysis occur simultaneously and continuously at all levels of the auditory system.

SOME ASPECTS OF THE ECONOMIC IMPACT OF OREIGN AID ON AN UNDERDEVELOPED COUNTRY: THE CASE OF PAKISTAN

by AZIZALI FARRUKH MOHAMMED*

INTRODUCTORY

This study seeks to establish a framework for analyzing some aspects f the economic impact of foreign aid in an underdeveloped aid-receiving untry and then applies the framework to a case study of Pakistan. he dominant characteristic which defines an aid transfer and provides e focus for this study is the governmental auspices and control under hich aid transactions take place. The implications of intergovernmental ansfers are worked out in the areas of economic development and onetary stability in the aid receiving country. The analysis is couched rgely in aggregative terms. Aid is treated as an addition to total re- urces and its impact on the pattern of resource utilization examined terms of broad alternatives, viz., consumption, national security, and vestment. The relation of aid to development is treated almost ex- usively in respect to its contribution to investment. The monetary alysis is similarly conducted in terms of aggregate demand and supply, affected by foreign aid. The only important disaggregation explicitly roduced is the distinction made between "domestic" and "foreign" sources.

Given the wide diversity of socio-economic conditions in underdevel- ed countries, the conceptual schema is deliberately restricted to econo- es having the following characteristics: (1) a high density of popula- n; (2) a narrow production base with subsistence agriculture as the in source of national income; (3) a substantial nonmonetized sector;) large scale disguised unemployment, especially in the rural areas;) low rates of growth of GNP; (6) scarcity of foreign exchange ources; and (7) a conscious program of accelerating the pace of eco- mic development.

AID AND ECONOMIC DEVELOPMENT

The intervention of government creates a singularly difficult problem analyzing the contribution of aid to investment. So long as the aid- eiving government has the power to choose between aid and its own ources in alternative applications, it can reduce its own resources in investment sector if aid is directed to that sector and by shifting them

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elsewhere, realize the additive contribution of aid in a noninvestment sector. We must therefore examine the use of aid of all types in the perspective of the allocation of total resources (i.e., foreign aid plus domestic resources) in order to detect any possible substitutions which would make the investment end-result of aid either more or less than the aid received and designated "investment aid." It is necessary to examine not only the pattern of resource utilization established by a given aid program but also to speculate on the pattern that would have emerged if aid had not been forthcoming. This demands essentially an exercise of judgment and the task is further complicated by the consideration that alternative uses cannot be unequivocally defined because of the complex of internal connections between one application of resources and another.

It is argued that some judgments might nevertheless be attempted in individual country situations if there exist technological or institutional limitations on the aid-receiving country's ability to substitute aid for domestic resources and vice versa. Alternatively, a country's circumstances might provide some basis for determining with reasonable assurance in what directions any substitutions could occur.

Assuming that such a judgment is reached, the next step is to determine the maximum amount of investment made possible by aid. For this purpose, aid is treated as analogous to an inflow of foreign capital per unit of time. It is shown that if unemployed domestic resources exist and can be absorbed in the investment sector or if domestic resources can be diverted without inflation from the consumption sector, total investment may be greater than the value of aid received.

Aid not only represents an increment to resources in general but also provides command over scarce imported resources. Because of this foreign exchange aspect of aid, its maximum contribution may be the reciprocal of the import co-efficient of investment outlays if (1) imports must be combined with local resources either in fixed proportions or within a limited range of proportions; (2) domestic resources cannot be transformed at the margin into foreign exchange resources; (3) the imported content of investment is independent of the availability of aid; and (4) the complementary domestic resources are available.

Some other ways in which aid may contribute to capital formation are then enumerated. In particular, the strategic role which an aid program would play in launching the aid recipient's economy into a path of self-sustaining growth is emphasized. Finally, it is argued that a country can maintain the rate of investment made possible by aid, after aid is withdrawn, only if the domestic rate of savings can be raised sufficiently and provided the necessary directional changes can be accomplished, especially in the foreign trade sector.

AID AND MONETARY STABILITY

The monetary impact of aid is treated in terms of whether its primary impact is deflationary or inflationary (i.e., whether there is a net subtraction or addition to the flow of current spending on domestic output). The case of an aid-financed import surplus can be compared with the "normal" case of a balance of payments deficit financed out of a country's foreign exchange reserves in order to determine whether there are any deviations from the ordinarily deflationary effects of the "normal" case. The device of the "counterpart fund" introduced into U. S. aid programs is found to contain a major possibility of deviation because the deflationary impact of an aid financed import surplus is made contingent upon the subsequent disposal of local currency proceeds deposited in the fund. The balance between receipts into and expenditures from the funds provides a first approximation to the monetary impact of aid. It is noted, however, that expenditures must include not only those actually recorded as "releases" from counterpart funds but also any "unreleased" balances which may have been indirectly "used up" by the aid-receiving government through anticipatory spending or the offsetting of deficit financing via the banking system.

The analysis is extended to cover all aid-generated local currency receipts and all aid-induced local currency spending, whether passing through counterpart funds or not. In order to determine the monetary impact of these flows, it is necessary to find out how the purchases of aid imports (inflows) and the purchases of domestic output (outflows) are financed.

Aid commodities are then grouped under four types, and their income-withdrawing or income-generating characteristics are examined. It is concluded that the more heavily weighted the aid program is in favor of military or investment items, the greater the chances that it will generate inflationary pressures, unless offset through appropriate policies in the aid-receiving country. Next, it is suggested that the monetary effects of aid are derived not only for changes in the level of purchasing power but also via aid-induced changes in its distribution. Certain propositions are advanced relating to any additional effects aid might have by bringing about changes in current availabilities. A contractive effect on domestic money incomes due to a rise in *real* income is premised on a marginal propensity to consume of less than unity, with respect to changes in real income. Next, the increase of money-work associated with the process of integrating aid supplies into the domestic income flow is found to have a deflationary effect, provided there are no excess balances and economies possible in the use of cash balances. Finally, it is argued that if aggregate real consumption is not independent of relative prices, changes in the latter due to the introduction of aid will bring about changes in real income which will have inflationary or deflationary results.

AID PROGRAMS IN PAKISTAN

This chapter outlines the main features of the Pakistan economy to show that the country falls within the group of underdeveloped countries to which the analytical framework is confined by the set of assumptions enumerated in the introductory chapter. This is followed by a description of aid programs during the period 1951–57 with reference to (1) the sources of aid, (2) the contents of aid, and (3) its speed to utilization. It is found that the principal aid-giving country has been the United States followed by the Colombo Plan powers, the United Nations and its specialized agencies. Of total aid allotments of $1.10 billion, roughly $331.10 million is inferred to have been military aid. Of the non-military aid, approximately 55 per cent is classified as investment type aid followed by consumer goods aid accounting for 35 per cent and intermediate goods for the remainder. The annual share of investment type aid has been declining relatively to other types and suggests the gradual broadening of aid programs from the financing of development projects in the public sector exclusively to the general support of the economy as a whole. Large variations in the rate of utilization of aid are partly explained by differences in commodity mix and by administrative considerations. The rate of utilization is slowest in the case of capital assistance. In addition to delays affecting all types of aid, the lack of well prepared development projects in Pakistan is considered as having been a major factor in lagging utilization of investment type aid.

AID IN RELATION TO ECONOMIC DEVELOPMENT IN PAKISTAN

The framework of Chapter II is applied to Pakistan. In the perspective of the country's economic situation and the policies pursued in recent years, it is argued that the component of total aid which had an investment end-result is much greater than the amount of investment type aid itself. This conclusion is based on the propositions that (1) the country's own foreign exchange resources were inadequate for meeting the requirements for imports in all sectors; (2) if the country would have had to pay for all the "mandatory" imports in the defense and consumption sectors, there would have been little or no margin for investment imports; and (3) to the extent that non-investment type aid financed such mandatory imports it released the country's own foreign exchange resources for investment purposes. Military aid is found to have benefited the defense sector exclusively. Of the non-military aid utilized, it is estimated about one-fourth was used for expanding consumption or the military establishment, or applied to U. S. uses. After making certain adjustments, the remaining aid expenditures of about $400 million are attributed to the investment sector so that the amount of aid which had an investment end-result is found to be about $143 million more than the investment type aid proper of $257 million. It is emphasized that this determination must be treated as tentative because of the side effects on investment of the aid which was directed to other sectors.

It is next argued that the total investment made possible by the aid which had an investment end-result would be even greater because it financed imports of investment goods on which domestic investment spending was technologically dependent. It is suggested that the assumptions of the special case enunciated in Chapter II may have been fulfilled in Pakistan so that the maximum contribution of aid would be the reciprocal of the import co-efficient of investment. On this supposition, but after making certain allowances, it is estimated that the total investment attributable to aid would be roughly twice its amount, given the high and relatively inflexible import co-efficient in Pakistan investment spending. This scale of assistance, while providing some margin for an increase in per capita incomes, is not considered adequate for launching the Pakistan economy into self-sustaining growth.

AID IN RELATION TO MONETARY STABILITY IN PAKISTAN

The framework of Chapter II is applied to Pakistan within the limitations of available data. The movements in counterpart funds established under U. S. programs are used as a point of departure for the analysis. After taking certain adjustments for timing, etc., it is suggested that while expenditures amounting to Rs. 0.55 billion have so far lagged behind receipts of Rs. 1.25 billion this trend could be reversed in the future as spending out of counterpart funds is expected to rise sharply. Unless receipts in the future are large enough to cover both the spending out of funds accumulated so far and those which would accumulate in the future, a difficult budgetary problem is expected to confront the Pakistan authorities.

The analysis is next broadened to account for all aid-related receipts and expenditures whether passing through counterpart funds or not. It is found that the total spending induced by aid (at Rs. 2.38 billion) would have been much greater than the corresponding aid-related receipts (at Rs. 1.60 billion) because of the substantial investment spending made possible by aid imports.

The monetary character of these aid-induced flows is determined with reference to the manner in which they were financed. The monetary impact of the inflows is related not to the commodities received under the aid program but to the commodities the import of which was made possible by aid in the sense that they would have been dispensed with if aid had not been forthcoming. The conclusions reached in Chapter V suggest that in the absence of aid the country would have cut down primarily on the imports of investment goods and secondarily of consumer goods. It is calculated that the inflows resulting from the sale of the additional consumer goods made possible by aid would be roughly Rs. 0.5 billion. These inflows would be almost entirely deflationary because consumer groups would not be expected under prevailing conditions to finance them, except through reduced spending on domestic output. The remaining aid-related receipts are then attributable to purchases of investment goods. Since aid-induced expenditures not met out of counterpart funds were also for investment purposes, the problem of determining the monetary significance of the remaining aid inflows of roughly Rs. 1.1 billion and outflows of Rs. 1.8 billion thus resolves itself largely into a question of how investment spending was financed in Pakistan in recent years. It is concluded from a study of financing possibilities that much of the aid-induced investment spending was inflationary in its general impact. While the private sector financed its share of investment spending largely through a dishoarding of idle balances, the public sector drew on bank credit and its cash balances for the same purpose. In either case, the purchases of investment imports (inflows) were thus almost entirely neutral in their monetary impact while the purchases of domestic output (outflows) were almost entirely inflationary. This inflationary outcome is attributed to foreign aid in a conditional sense, if not a necessarily causal one.

THE GROWTH AND MORPHOLOGICAL DEVELOPMENT OF TWO PSITTACOSIS STRAINS IN TISSUE CULTURES

by JULIUS EARLE OFFICER *

The psittacosis-lymphogranuloma viruses have been extensively studied by many investigators (reviewed by Weiss, 1955). Relatively minor differences were noted between the members of the group with respct to inclusion body morphology, cycle of growth of infectious virus, and the effect of the virus on the host cell. However, the interpretations of the growth and morphological development of the members of the group by different investigators have varied.

This investigation was initiated to study and compare the growth of two strains of psittacosis virus, the relatively avirulent 6BC and the more virulent Borg, in tissue culture, so that the interaction between the virus and host could be followed at the cellular level. Special attention was given to the similarities or differences as a result of (1) using two strains of psittacosis which differ in virulence *in vivo* and (2) using two different tissue culture systems as host.

The tissue culture systems were selected on the basis of the known virulence of the virus strains for the host and the morphology of the individual cells within a population. Both strains of virus multiplied equally well in all embryonic mouse tissues investigated. Embryonic mouse lung cell cultures (EmLu) were used as the host cell for both strains in this investigation because of their faster proliferation rate over cell cultures derived from other mouse organs (e.g., liver, heart), and also because their thinness and absence of inclusions made them more suitable for subsequent cytochemical studies.

Primate cell cultures were investigated for susceptibility to psittacosis infection in order to compare morphological development and growth of the virus with that observed in EmLu cultures. The human cell cultures used in this investigation were "stable" cell lines. Thus, in addition to the comparative study of virus growth in human and animal cell cultures, the use of the "stable" line offered the possibility for comparing the virus susceptibility in these cells with cells from tissues recently isolated from an intact host (EmLu).

Cell cultures of Chang's human liver, Chang's human conjunctiva, and Maben's human epithelial type supported the growth of the Borg strain equally well. The Chang human liver cell cultures (CHL) were selected for subsequent virus studies because of the ease of maintaining and transferring the cultures in the laboratory, and because of the morphological structure of the cell.

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The preliminary experiments were concerned with factors affecting the virus absorption rate in tissue cultures. These factors included virus concentration, temperature, the effect of agitation of the cultures, pH, and salt concentration of the virus inoculum.

A high ratio of virus to cell at the interface between the virus-containing supernatant and cells was necessary to infect 10 per cent or more of the cells. A tenfold dilution of the virus caused a similar decrease in the number of infected cells obtained during the first growth cycle of the virus. A high dose of Borg virus ($10^{7.5}$ yolk sac LD_{50} per ml) usually infected approximately 100 per cent of the cells in both EmLu and CHL cell cultures. On the other hand, 6BC at the same virus concentration infected 90 to 95 per cent of the cells in EmLu cultures and only 5 to 10 per cent of the cells in CHL cultures. This observation was the first indication that there was a difference in the properties of the virus strains *in vitro* in these experiments.

The rate of virus absorption at 22° C and 37° C was compared. Absorption at 22° C was studied to find the time interval necessary for maximum virus absorption at a temperature that would not permit or would at least limit virus growth. The results showed no significant change in rate of virus absorption between 22° C and 37° C for comparatively short absorption periods. The rate of absorption decreased with time. In all probability this was due to the instability of the virus at these temperatures.

Agitating the virus inoculum with the cells at 120 revolutions per minute resulted in about twice as many infected cells as were obtained in stationary cultures.

The pH of the virus inoculum was tested over a range of 6.0 to 8.0. In this range the pH of the inoculum did not influence the final percentage of infected cells obtained. Further, a 75 per cent decrease in the salt concentration of the balanced salt solution did not affect the absorption rate. The virus was also absorbed by the cells when it was suspended in distilled water, though at a decreased rate.

Comparative studies of the growth of 6BC in EmLu and CHL cell cultures demonstrated a difference in the susceptibility of the different cell cultures to virus infection. When high inoculum doses of 6BC were used to infect EmLu cultures, more rapid growth and a higher peak titer were obtained than when lower doses were used. The virus infectivity titer remained constant or decreased slightly the first 24 hours. Between 24 and 48 hours a rapid increase of virus titer was obtained. A closer analysis of the first growth cycle of 6BC showed a decrease of virus both intracellularly and extracellulary up to 20 hours. Thereafter the intracellular virus increased from a low of $10^{2.9}$ yolk sac LD_{50} per ml to a maximum of $10^{7.8}$ by 32 hours. A corresponding increase was detected in the extracellular virus.

Morphological examinations of infected cells stained at different time intervals revealed that the virus made its first appearance in the form of initial bodies at about 12 hours. The initial bodies increased in size to form a dense staining plaque by 16 hours. At 24 hours the plaque had increased in size and definite particles could be detected within the plaque matrix. CHL cultures infected with 6BC showed about the same morphological development and growth as was shown in EmLu cultures. In this case, however, as a result of the low susceptibility of the cultures to 6BC, lower peak titers were obtained. EmLu cultures showed slight cytopathogenicity when infected with 6BC whereas CHL cultures infected with 6BC showed none.

The absence of cytopathogenicity of 6BC made it possible to establish a "chronic" infection in cell cultures. These 6BC-infected cultures have been transferred 16 times over a 5-month period without change in virus susceptibility. The chronic state was, in part, attributed to the fact that only a fairly constant low percentage of cells in the culture were infected. The chronic state was also related to the virulence of the infecting virus, since attempts to establish it with the more virulent Borg strain always resulted in destruction of the cells.

Both cell strains were equally susceptible to infection with Borg. This virus was able to proliferate more rapidly than 6BC and also presented morphologically different developmental forms. In daily growth curves using heavy inoculum doses for cell infection, an immediate rise in titer was detected by 24 hours which continued, reaching a peak of $10^{9.3}$ yolk sac LD_{50} per ml by 48 hours. Cell destruction was very intense at this time and was usually complete by 72 hours.

Analysis of the first growth cycle of Borg in each of the tissue culture systems revealed a progressive increase of infectious virus within the cell between 12 and 16 hours. Thereafter, the intracellular titer increased rapidly, reaching a peak by 20 to 24 hours. An increase in extracellular virus was not found until approximately 2 hours after the intracellular increase.

The first morphological forms in Borg infected cells, as shown in stained preparations, were initial bodies which appeared 4 to 8 hours after infection. These apparently multiplied by binary fission as judged by the diplococci and chain forms of cocci that appeared. They were spread diffusely in the cytoplasm without any apparent limiting membrane. Both desoxyribonucleic and ribonucleic acid were demonstrated in all developmental forms of the virus as determined by cytochemically staining, e.g., Feulgen, methyl green-pyronin Y, and toluidine blue used in conjunction with specific nucleic acid enzymes. However, no difference was obtained in the nucleic acid distribution of infected or noninfected cells excluding the virus nucleic acid.

The initial phase of virus development was not detected by phase microscopy. The refractive index of the first forms to appear (8 to 12 hours) was only slightly different from that of the cytoplasm of the cell. These forms increased in number and in refractive index, with a resulting decrease in size, as the infection progressed. Brownian movement occurred in the late vesicle stage. At the time the vesicle was enlarging a decrease was observed in the density of mature elementary bodies contained within the vesicle.

An overall comparison of the action of the two strains, 6BC and Borg, on mammalian cells *in vitro* presented a possible correlation with their known virulence *in vivo*.

THE THEOLOGICAL BACKGROUND OF CHRISTOPHER MARLOWE'S *THE TRAGICAL HISTORY OF DOCTOR FAUSTUS*

by RAYMOND HOWARD RENO*

The purpose of this dissertation is to study Christopher Marlowe's *The Tragical History of Doctor Faustus* against the background of 16th century English theology. Although there have been studies of the theology in *Faustus,* these have been comparatively brief and none has thoroughly explored 16th century theology itself. Most have relied upon general views of the theology, derived often, indeed, from secondary works. Further, in such studies, there has been little if any attempt to see the theology of the English Reformation in its relationship to Reformation thought on the Continent. This dissertation, therefore, approaches the theology of *Faustus* only after detailed study of the theology of the Continental Reformation, followed by an analysis of English Reformation theology. My thesis is that *Doctor Faustus* is not an "atheistical pamphlett" disguised in the form of a morality play but very definitely a Christian drama of the English Reformation.

The first three chapters of this study explore the Reformation doctrines of justification on the Continent and in England. Justification is chosen because in religion the burning question is always that of salvation and because no other doctrine was of equal importance to the Reformers themselves. Justification by faith is the basis, the central doctrine, of Reformation theology, and all other doctrines derive both their character and importance from it. On it and its attendant doctrines, the Reformation broke most emphatically with medieval Catholicism. No other doctrine, therefore, provides greater insight into the essential characteristics of the Reformation.

Chapter I, "The Doctrine of Justification in the Continental Reformation", begins with Luther's fears of death and damnation. From his childhood Luther had been troubled with extreme fear and in 1505 a number of events occurred—climaxed by the famous thunderstorm—that terrorized him into a monastery. There, however, he found no peace and was beset by the most extreme scruples, believing himself certainly to be damned for concupiscence, which he took to be sinful in itself. His problem, therefore, was this: How can I be saved if it is impossible for me to avoid sinning?

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This is the general problem of the Reformation. Man with all his works is condemned and can do nothing but despair. The law demands absolute perfection and therefore it cannot be fulfilled by man. Instead it furthers man's despair. The result is such indescribable agony that if help did not come, man would have to give way to despair forever.

Help must come, however, for it is unthinkable for Luther and the Reformation that man should continue to fluctuate in uncertainty. Doubt, further, is antagonistic to the very essence of Christianity, which is "grace and peace". Luther begins, then, in fear and strives for a theology which will provide him with security, with assurance of salvation.

Despair, actually, is the first step in the process of finding security, for when one despairs, he throws off all confidence in himself and his works and turns instead to God, trusting that God will save him in spite of his sins. This, as Luther found it in St. Paul's Epistle to the Romans, is justification by faith alone. Because of Christ's merits, God has forgiven "us all former sins": this fact the Gospel reveals, and the sinner to be justified must lay hold of it through faith. Faith is defined as to doubt not "of God, nor of his promises, nor of the forgiveness of sins". Men are justified "when they believe that they are received into favor, and their sins forgiven for Christ's sake. . . ."

Security, therefore, is immediately established by this doctrine, for a knowledge of one's sins and unworthiness cannot destroy one's confidence: in salvation, man's role is a passive one. By faith alone he has "forgiveness of sins . . . and although he had not satisfied the law, still the remaining sin is not imputed to him, but is included in the forgiveness." "He is accepted by God through grace and forgiveness, and regarded as if he had no sins."

Developing from and related to the central doctrine of justification by faith are a number of other doctrines, the chief of which are three—the doctrines of total corruption, of imputation, and of predestination.

Against the traditions of scholasticism and humanism, the Reformation asserted that man is totally corrupt. He is altogether *flesh*—body and soul, intellect and will. "Whatever . . . we have from nature is carnal." The source of human iniquity is the human heart itself, and therefore, since his every act is sinful, man can in no way cooperate in his salvation. It is necessary to recognize this fact, for only through an awareness of it can man sufficiently despair in himself and put his reliance upon God, thereby finding security.

The doctrine of imputation holds that Christ's merits are imputed to the believer. Man can have no merits of his own, since he is totally corrupt and his every act a sin. For the believer, however, his sins are not "imputed" to him. "A Christian is not he which hath no sin, but he to whom

God imputeth not his sin, through faith in Christ." Justification does not actually renew the justified: it "leaves sin untouched"; but since this sin is not imputed, the justified can have perfect confidence in his salvation.

The doctrine of predestination is much older than the Reformation, going back in Christian times to St. Paul and being the subject of much theological controversy in the medieval and premedieval Church. However, no matter how much dispute there was concerning it among theologians, the Catholic Church in its official pronouncements rejected any interpretation of predestination that excluded either the necessity of grace or free will. Further, the common assumption of Catholic theologians in general after Augustine was that grace and free will could be reconciled.

The Reformation, however, completely excluded free will and, most importantly, demanded precisely the reliance upon predestination which Catholic theology had forbidden. For Catholic theology, predestination was a "sacred mystery"; for the Reformation it was a doctrine of great and "unspeakable comfort". According to the Reformation doctrine, God determines in his own will those who will be saved (the elect) and those who will be damned (the reprobate). Election is *ante proevisa merita;* there is no cause for election outside of the secret will of God alone. Nor are God's decrees merely permissive, "but influential".

Since the doctrine is stated for the benefit of the elect—"to maintain the glory of the Lord . . . and to preserve in our own consciences a placid composure and serene tranquility with regard to the Divine judgment"—signs of election are of prime importance. These are "calling" or inward illumination, which is the assurance that one is saved through the merits of Christ, and "perseverance". The elect never doubt that they are saved, and they persevere in that faith to the end. The reprobate, too, may believe they are saved, but their security is a false security, and while the elect may have occasional doubts, these doubts are different from those of the reprobate in that the elect do not remain in doubt. Perseverance, then, is the final testimony of election.

The Reformation thus has come full circle—beginning with the goal of security it proceeded through the doctrines of justification by faith alone, total corruption, imputation, and predestination, to the signs of election, the only certain one of which is perseverance. Since, however, this is a sign which cannot be determined until after death, it can provide no assurance. Nevertheless, this theology was widely accepted in Europe and in the British Isles. In England, however, its acceptance was comparatively slow and never altogether wholehearted, and although for most of the later 16th century, English theology appeared clearly Calvinist, underneath the surface there lay a decided antagonism to Calvinism which in the 17th century erupted into an open break with the doctrines of Geneva.

Chapters II and III trace the English Reformation theology of justification from 1536 to the Westminster Confession in 1647, Chapter II discussing the English doctrinal statements and Chapter III the writings of the theologians themselves.

Chapter II shows that while Henry VIII was reluctant to embrace Continental doctrine, he permitted enough of it to enter into English theology to serve his anti-papist purposes, giving encouragement thereby to Reformers of a more extreme position, such as Cranmer. Under Edward VI, however, Cranmer and the early Reformers were given much more freedom, the result being that the Forty-two Articles of 1553 were modeled on the Lutheran Augsburg Confession of 1530. The Thirty-nine Articles of 1562-63 were in turn based on the Forty-two Articles and also upon another Lutheran document, the Confession of Würtemberg. A study of the Articles reveals that, while their language is the result of "studied ambiguity", on nearly every important point regarding justification (depravity, free will, good works, faith, and predestination) they are definitely Protestant and differ obviously from the modified Catholicism of Henry VIII's last doctrinal statement, *The King's Book*.

The rest of Chapter II surveys the conflict in English theology between the Calvinists and their opponents as it is reflected in public developments until the Commonwealth. The conclusion drawn is that a study of such matters as the Lambeth Articles of 1595 and the English participation in the Synod of Dort in 1618-1619 indicates that on the surface the English Church in general appeared Calvinistic but beneath that surface ran a definite antagonism to and distrust of Calvinist doctrine.

Chapter III—studying the writings of such early English Reformers as Bishop Hooper, Hugh Latimer, John Bradford, William Tyndale, Thomas Becon, Henry Bullinger, and Thomas Rogers—concludes that the general picture of English theology as reflected in the public doctrinal statements is also to be drawn from the writings of the theologians themselves. That is, the English writers were on the whole eager to embrace the comforting doctrines of justification taught on the Continent but were reluctant to accept certain consequences of those doctrines, particularly the doctrine of irrespective reprobation. This conflict—this distrust of the extreme reaches of Calvinist theology—goes back actually to the quarrel between Henry VIII and Cranmer over the King's criticism of the *Bishops' Book* and is manifested again, nearly sixty years later, in the writings of Richard Hooker. Hooker, like the general body of the English theologians, accepted the Reformation doctrines of justification and predestination but tried to establish free will and human cooperation and was seriously disturbed by the doctrine of irrespective reprobation. In this way he reflects that general attitude of the English Church which nothing could make more clear than the uproar caused by the publication in 1624 of Richard Montague's *Appello Caesarem.* The public quarrel and the conferences on this book held at York House in 1625 brought home, as perhaps nothing previously had done, how hostile to English sensibility was fundamental Calvinism. From about this time, therefore, the cleavage in English theology that had begun as far back as Henry VIII and had run beneath the surface since the end of Henry's reign now began to be apparent to all men.

It is against this general theological background that Chapters IV and V study Christopher Marlowe's *The Tragical History of Doctor Faustus.* Until recent years the criticism of the play has been traditional: it is a parable of unlawful ambition and Faustus himself is an intellectual Tamburlaine made in the image of his creator. However, a careful analysis of the play indicates that, as its morality form would lead one to suppose, it actually deals with the theme of man's salvation through grace and repentance. Unravelling the theological threads, we find the first one of great significance in the opening scene: Faustus' rejection of his studies, particularly divinity. He draws two texts from Scripture—*"Stipendium peccati mors est"* (Rom. 5:23) and *"Si pecasse negamus, fallimur et nulla est in nobis veritatis"* (I John 1:8)—and using them as the major and minor premises of a syllogism concludes that man cannot be saved. Therefore, "Divinity, adieu!" However, even an Elizabethan schoolboy would have realized that the solution to the dilemma is that God's mercy intervenes and saves man in spite of his sins. Why, then, cannot Faustus, who is a doctor of theology, perceive this?

The answer is that, according to the theology of the day, either Faustus is deliberately forcing himself into atheism or he is a reprobate and by definition blind to God's mercy—at least for him. Later scenes in the play, particularly Act II, scenes i and ii, stress Faustus' inability to believe that he can yet be saved and pose for analysis the question whether or not Faustus *can* repent. Examining the theology of the day, one finds that the precise characteristic of the reprobate is blindness to the fact of God's mercy—and hardness of heart. Two plays nearly contemporary with Marlowe's *Faustus,* Nathaniel Woods' *The Conflict of Conscience* and Barnabe Barnes' *The Devil's Charter,* dramatize the stories of obvious reprobates. Both plays correspond to the general theology in indicating blindness to God's mercy and hardness of heart as the characteristics of the reprobate. Further, in a number of ways, the careers of the reprobates in the two plays parallel quite closely the progress of Faustus through Marlowe's work.

The last act of *Doctor Faustus* continues the emphasis upon Faustus' inability to believe that he can repent. Moreover, he tells the Scholars who try to comfort him that he has committed the unforgivable sin, the sin against the Holy Ghost. Many commentators believe the sin against the Holy Ghost to be despair itself, but a study of Reformation theology on this point reveals that for the Reformation the sin was actually that of blasphemy—that is, the open resistance to and flouting of God's word, the refusal to believe in the open and plain promises of God and to rely upon his mercy. This Faustus is certainly guilty of (Act I, scenes i and iii; Act II, scene i, and Act V, scene i). Further, this is a sin which can be committed only by the reprobate. In the last scene of the play, Faustus dies still unable to believe that God can have mercy on him.

Chapter V surveys the pre-Reformation and post-Reformation morality plays in England and notes some important differences between the two types. While both types are based on the assumption that grace is necessary for salvation, the pre-Reformation morality places an emphasis upon man's free cooperation with grace that is not altogether to be found in the later form. Moreover, the post-Reformation morality is distinguished by its dramatization of justification by faith alone and its depiction of the state of despair. Its theology appears to be that for salvation it is necessary that one believe he is saved and in this way emerge from the despair into which the recognition of his sins has thrown him.

That *Faustus* conforms to the pattern of the post-Reformation morality play is evident upon analysis. Marlowe, of course, was first of all a dramatist, and this fact must certainly not be lost sight of. At the same time, however, his drama has a theological theme, and therefore to be understood must be seen against the Reformation theology of justification which is its background.

When the play is thus studied, a contradiction emerges. Faustus has all the significant and traditional characteristics of a reprobate and yet distinctly impresses us as having free will. How is the contradiction to be explained? First, of course, there is the requirement of the dramatic form. A Faustus without the appearance of free will would be dramatically ineffectual. Secondly, however, a cause must be found in the doctrine of reprobation itself. That is, in the final analysis, there was only one sure sign of reprobation—namely, the lack of perseverance—and even Woods, who obviously dramatized a reprobate—created a character whose fate up to the very end of the play was doubtful. This, too, is the case with Faustus. Finally, if one relates *Doctor Faustus* to the state of English theology in the early 1590's, he sees that the play reflects the general ambiguity of that theology and its latent but growing distrust of Calvinism. On the subjects of free will and reprobation, the play, like English theology in general at the time, is Calvinist in outline but is not committed, finally and definitely, to the most extreme positions of the Genevan doctrine.

Nevertheless, the play is a Reformation document for it clearly dramatizes the doctrine of justification by faith. In *Faustus* deeds matter little: what is important is belief. Faustus' sin is one of the intellect and the will, and what finally damns him is his refusal or his inability to give assent to the fact of God's mercy. In other words, *The Tragical History of Doctor Faustus* dramatizes the Reformation concept that in salvation the imperative thing is to believe you are saved: To believe you are saved is to be saved.

THE GUIDANCE FUNCTION IN MANPOWER RECRUITMENT FOR THE UNITED STATES ARMY

by ROBERT WATSON SYLVESTER *

The transition from an activity oftentimes more closely resembling the ancient practice of impressment, to the highly specialized functions of counseling and guidance in the recruitment of men for military service in the Army, has been a long and tedious one. Indeed, the transition has taken place for the most part in the last ten years, a fact which is largely responsible for the painful recollections of thousands of individuals who contemplate military service, particularly service in the Army, in the frame of reference derived from their unhappy experiences during World War II. That this experience, growing out of the turmoil of mobilizing tens of thousands of men in preparation for a great world war, should be so emotionally deep-seated as to influence the judgment of these veterans (now parents, themselves), in their attitudes and opinions, is an interesting research problem in itself.

The research reported upon in this dissertation has explored the many reasons why men do, or do not, enlist; do, or do not, reenlist; why men think of the Army as they do; why the recruiter's task has become so difficult; why old methods, old ideas and beliefs, old approaches and appeals no longer are effective in the recruitment of men for military service.

The influence of the draft, of Selective Service in *peacetime*, has been an important factor in cultivating the emotional set of adults with long memories of World War II, and of impressionable youths facing a period of military obligation. Involuntary military service has a connotation that brings resentment to the unfettered thinking of a young generation reared in the traditional freedom of the American ideal.

It is scarcely strange that the methods of recruitment of yesterday, with their so-called "hard sell" appeals to "see the world", "free clothing", "medical care", and "three squares-a-day", could appeal only to that segment of the population in the socio-economic scale for which these considerations loom large and significant. Unfortunately, this research has demonstrated, all too clearly, that such personnel are too often of such marginal utility, trainability, and potential to the Army as to represent a risk, rather than an investment. Rather, the research more clearly identified the population the Army seeks as being younger, smarter, more discerning, more sophisticated, more aware, and of infinitely greater potential.

The research also demonstrated the fact that this population could see no future, certainly not *their* future, in an Army career. More specifically, they saw no promise of personal achievement, as they understood the career opportunities open to them, and as presented by the Army's recruitment personnel. The few recruiters who were able to communicate to these young men the undeniable advantages of an Army career were surprisingly successful in their efforts to persuade these potential leaders, technicians, noncommissioned and commissioned officers, to seek the Army as a rewarding and challenging experience.

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Young people today are curious, as always; but they are curious in a factual, self-oriented way. They have learned to think for themselves in a hard and practical manner. That "life is real, life is earnest" is a truism they understand as well as their parents.

The sheer number of young people graduating from high school and college is as significant an indicator of these changing times as any which could be cited. The vast and complicated developments of this Atomic Age, this Age of Satellites, this era of frightening and exciting portent, has made the Nation's youth truly old before their time; but old only in the sense that, in their awareness of the urgency of these days in which they live, they plan carefully and analytically. This research has demonstrated the calculated points-of-view with which they survey their individual worlds and what they, themselves, can offer, and expect in return.

Despite their sophistication, however, they are still young enough, like their elders, to be confused betimes, and often to wonder. While the specious, the pat, and the ordinary may not influence them to any degree, they seek and need guidance and counsel, perhaps if motivated by no other consideration than the choice between two evils (as Chaucer has it)—or, even more realistically, the choice, among several directions, to success.

This is the dominant and significant finding resulting from this research: men at any age and time, at the point of decision, seek and welcome counsel and guidance when compelling decisions must be made.

The role of the guidance function in the recruitment of men has been demonstrated by the increase in enlistments in the Army's technical school program (52 per cent) in the eight months since this research was completed. The fact that prospects for enlistment who show marginal mental ability (below 90 on the General Classification Test) can no longer enlist, has resulted in a reduction of 21 per cent of the total number of enlistments planned for; yet, in 1957, the number of high school graduates who enlisted increased from 13 per cent (1955) to 65 per cent. The reenlistment rate of men already in the Army, who must qualify under equally high criteria, has risen from a yearly average of 12.2 per cent (1952-5) to 28.6 per cent in 1956-7. These gains are highly significant; but from the data reported upon in this research there is every expectation that with a more scientific selection and training of recruitment personnel, an improved and enlarged course of formal school training, and the adoption of a program of training, operation, and supervision oriented in the techniques of guidance, greater gains will result.

The research also indicated the need for an extensive revision in Army-wide administrative policies and procedures. Such changes are being implemented rapidly as of the writing of this dissertation; it can be reported that many other changes are being planned.

In the important area of public information, the use of publicity and advertising media, and the development of guidance and occupational literature, much progress can be reported. This research has exploded many traditional concepts and cherished beliefs, particularly in these areas. Professional educators are participating in the development and preparation of booklets, films, and various media, for young people, adults, teachers, parents, counselors, civilian counseling agencies, and a wide variety of institutions and service organizations. The entire program of instruction at the Adjutant General's School has been written under the guidance of educators, doubled in length, and its content based upon the findings of this research.

Finally, the image of the Army, as the public views it, is being altered, slowly, painfully, but inevitably. Guess-work, "hunches", and hit-or-miss tactics have given way to the impersonal, analytical, and revealing eye of research. The significance of the growing acceptance of the Army and its part in the national defense lies *not* in its occupational competitiveness, or as a means merely of earning a livelihood; but, rather, in its vital role in the defense of the Nation. Hence, the Army recruiter fills a larger role than one of recruitment. In his own right, he is an "educator", a communicator of ideas and ideals.

Young people must understand, through the guidance and counsel of parents, teachers, and leaders in their world, indeed, all those to whom they look for answers, that their goals can be filled and their dreams realized, only if they are willing to accept all the terms of their rights and responsibilities of citizenship.

The Army's responsibility to young people, in turn, is tremendous. This research has delineated much of this responsibility. The Army recognizes the fact that the guidance function is the operative procedure by which it aids and assists its personnel, and those whom it seeks to recruit, to make a satisfactory adjustment to military service and to progress under its career guidance plan.

In the final analysis, the ultimate purpose of psychological research is to define the problem, to observe systematically the behavior of the organism in relation to the problem, and to analyze and interpret these observations. To the extent that this research has analyzed the problem of defining the role of the guidance function in the recruitment of personnel for the U. S. Army, and of providing those responsible for manpower recruitment with a more scientific approach to the resolution of the difficulties they face in their task, and of enabling the recruit to understand more fully and accurately the Army's place in the Nation's affairs, and his place in the Army—to that extent the research has accomplished its purpose.

STUDIES ON THE ABSORPTION OF CHOLESTEROL IN THE RAT

by GEORGE VARTKES VAHOUNY *

Our knowledge concerning the absorption and metabolism of cholesterol has been vastly expanded in recent years primarily due to the advent of new techniques and approaches, and modifications of existing ones, for application to this field. The use of isotopic labelling has contributed largely to these advances, and, for example, has demonstrated that animal tissue is able to synthesize cholesterol from smaller molecules. Tritium- and C^{14}-labelled sterols have been employed in absorption studies and are presently among the more important of the analytical approaches for providing definitive information on this physiological process.

The introduction of a rapid and practical technique for collection of intestinal or thoracic duct lymph in rats has also been an important tool in the study of fat and sterol absorption. Although this procedure is relatively new and has certainly not been used in all of its applications, it has led to the demonstration that the lymphatic pathway is the major, if not the exclusive, transport system for absorbed cholesterol. This latter finding has greatly increased the importance of the cannulation technique for studies on the mechanism(s) involved in, and the factors affecting the intestinal absorption of dietary cholesterol. In the past, much of the information on this subject was derived from analysis of blood or tissue sterol levels following prolonged ingestion of a dietary regime containing cholesterol, or by a determination of the rate and extent of cholesterol disappearance from the gastrointestinal tract. Although these data have been, and are presently of considerable value in the formulation of our present concepts of sterol absorption, it is apparent from the considerable areas of substantial disagreement, that these findings must be supplemented and further extended by the use of newer analytical and surgical techniques presently available.

The purpose of the present investigation was to study the single and combined effects of fatty acids and bile salts on the intestinal absorption of exogenous and endogenous cholesterol via thoracic duct lymph in rats. Special attention was given to the degree of esterification of the absorbed cholesterol during translocation from the intestinal lumen to the lymphatic system. It was felt that the application of carefully controlled experiments could provide quantitative data on the rate and extent of cholesterol absorption and esterification, and thereby provide a more critical analysis of the role of the esterification mechanism during the absorptive process.

In the initial study, it was shown that the intragastric administration

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of sodium taurocholate or oleic acid, incorporated into a saline-albumin medium, produced significant increases in the total lipide, neutral fat, and phospholipide levels of lymph, but had no effect on the levels of free or esterified cholesterol. Cholesterol administered alone (50 mg) was not absorbed by the rat, nor were significant changes in the lymph lipide partition observed. When given with taurocholate or oleic acid, dietary cholesterol was absorbed to the extent of 13 per cent and 9 per cent, respectively; increases in the other lipide fractions, comparable to the levels observed when the bile salt or fatty acid was given alone, were also found. The administration of cholesterol, oleic acid, and sodium taurocholate in combination, resulted in the highest lymph levels of total lipides, phospholipides, and total cholesterol. In this instance, the absorption of exogenous cholesterol was 27 per cent of the administered sterol.

The amount of free cholesterol in lymph was relatively constant throughout all groups studied. The percentage of the esterified form in total lymph cholesterol ranged from 66 per cent to 81 per cent, with the higher levels in those groups where cholesterol absorption occurred. Esterification of "extra" or absorbed cholesterol ranged from 86 per cent to 92 per cent. It appeared that essentially all of the cholesterol which is transferred from the intestinal lumen to the lacteal is esterified.

In those animals receiving a complete emulsion containing saline, albumin, cholesterol, oleic acid, and sodium taurocholate, a rapid increase in total lymph cholesterol occurred in the initial 3 hours after feeding, followed by a gradual fall in this fraction to near preabsorptive levels at the end of 9 hours. These variations in the total cholesterol of lymph were attributable almost entirely to changes in the esterified fraction, while the free cholesterol levels were constant throughout the 24-hour experimental period. Comparable changes were evident in the total lipide, neutral fat, and phospholipide levels of lymph.

The omission of albumin from the complete emulsion resulted in less rapid increases in the lymph lipide fractions initially, which were, however, prolonged at higher levels throughout the experimental period. In contrast to the other lipide fractions in this group of animals, the amount of total lymph cholesterol for the 24-hour period was significantly greater than when albumin was incorporated into the intragastric emulsion. In both experimental groups, the increases in lymph cholesterol were attributable almost entirely to the increase in the esterified fraction which comprised between 84 per cent and 92 per cent of the absorbed sterol.

The prevention of normal bile circulation in lymph fistula rats resulted in a marked reduction of all lipide fractions of lymph, but was without definitive effect on lymph volume. The administration of oleic acid, taurocholate, and cholesterol in various combinations to these animals failed to elevate the lymph lipide levels to those of normal fasting control animals. The inclusion of sodium taurocholate in amounts up to 430 mg in the intragastric emulsions containing cholesterol and an excess of fatty acid did not produce significant absorption of cholesterol, emphasizing the importance of the continuous circulation of bile constituents for the intestinal absorption of dietary cholesterol.

In lymph fistula animals, a molar relationship of oleic acid, sodium taurocholate, and cholesterol of 8:4:1 was found to be the most effective for the absorption of 50 mg of dietary cholesterol, for fatty acid absorption, and for phospholipide production by the intestinal mucosa. At these dietary levels of fatty acid and bile salt, elevation of the amount of dietary cholesterol administered did not result in an increase of cholesterol absorption, either in absolute levels of lymph cholesterol, or as percentage of the administered dose. Thus, the necessity of fatty acid, bile salt, and cholesterol, present at the same time, and in the proper dietary proportions for most efficient absorption of fatty acids and cholesterol, was demonstrated.

Of the various fatty acids studied as to their ability to promote the intestinal absorption of dietary cholesterol, only stearic acid, oleic acid, and linoleic acid in emulsions containing sodium taurocholate and cholesterol produced significant increases in the total cholesterol levels of lymph. Oleic acid was the most effective in this respect, while linoleic acid and stearic acid were progressively less effective. Butyric and lauric acids were without effect on exogenous cholesterol absorption, and palmitic acid appeared to interfere with this process.

Among the comparable triglycerides tested, only trilinolein and triolein, two unsaturated triglycerides, produced significant elevations of total lymph cholesterol. These increases were not, however, as marked as those produced by the corresponding free fatty acids. It was of interest that trilinolein was significantly more effective in promoting the absorption of dietary cholesterol than was triolein. It is concluded that the free fatty acids stimulate cholesterol absorption more effectively than comparable triglycerides. In addition, unsaturation of the fatty acid molecule contributes to this facilitory effect.

In a comparative study of the rate and extent of cholesterol ester absorption, it was demonstrated that the cholesterol of a short-chain fatty acid ester (cholesterol butyrate) was absorbed as rapidly as free cholesterol and to a comparable degree. The esters of long-chain, unsaturated fatty acids (cholesterol oleate and linolete) were absorbed less rapidly and to a lesser extent. The saturated fatty acid esters (cholesterol laurate and stearate) were absorbed even more slowly, and extremely inefficiently by the rat. The data show a close correlation with *in vitro* studies concerning the rate and extent of cholesterol ester hydrolysis by pancreatic cholesterol esterase. In all groups in which significant cholesterol absorption occurred, the "extra" cholesterol was esterified to the same high degree that had been observed in previous experiments.

In an attempt to clarify the question of the absorbability of unhydrolyzed cholesterol esters, the absorption of cholesterol trimethylacetate was studied. This ester has been shown to be unaffected by hydrolytic cholesterol esterase and did not appear to be absorbed in long-term feeding studies. Using a conventional and a modified technique for ester saponification in the determination of total cholesterol, it was found that the administration of cholesterol trimethylacetate in an oleic acid—taurocholate emulsion did not produce any alteration of the total and free cholesterol levels of lymph. This demonstration of the lack of absorption of an unhydrolyzable cholesterol ester provides strong evidence that dietary cholesterol esters are hydrolyzed by intraluminar cholesterol esterases prior to absorption and esterification by the intestinal mucosa.

Since it had been suggested that the lymphatic system might contribute to the esterification of absorbed cholesterol, an *in vitro* study was conducted to determine the effects of this medium on the cholesterol partition of lymph, and on the ability of lymph to synthesize or hydrolyze cholesterol esters in synthetic digests. The results demonstrated that lymph does not contain either synthetic or hydrolytic cholesterol esterase activity, and does not cause any alteration in the normal cholesterol partition of lymph.

Finally, the absorption of dihydrocholesterol was studied employing the optimal conditions for intestinal sterol transfer established earlier. By application of a newly developed anthrone procedure for the determination of total saturated and unsaturated B-hydroxy sterols, in combination with a conventional method for cholesterol analysis, the absorption of dihydrocholesterol at two dietary levels was demonstrated. Although this absorption did not proceed to the same extent as for comparable levels of cholesterol, the absorbed dihydrocholesterol was esterified to the same high levels as absorbed cholesterol (range 84 per cent to 93 per cent). The administration of an equimolar mixture of cholesterol and dihydrocholesterol (25 mg of each sterol) resulted in a marked depression of cholesterol absorption. However, there was no apparent effect on the extent to which the absorbed cholesterol was esterified. In contrast to the decrease in cholesterol absorption, dihydrocholesterol was absorbed to the same extent in the presence of cholesterol, as when fed alone. Increasing the dietary levels of the two sterols (50 mg of each sterol) led to almost complete inhibition of cholesterol absorption, and a marked depression in dihydrocholesterol absorption. However, wherever sterol absorption was measurable in this study, the extent to which the absorbed sterol was esterified was not affected. The data suggest that the absorption of dihydrocholesterol proceeds through a similar, if not identical esterification process as has been proposed for cholesterol absorption.

It is concluded from these studies that the esterification mechanism is an obligatory process for the transfer of cholesterol from the intestinal lumen to the lymphatic system. Irrespective of the factors affecting the rate or extent of cholesterol absorption, the absorbed sterol is more or less completely esterified during absorption; this process probably occurs in the intestinal mucosa. The appearance of small amounts of free cholesterol in lymph during cholesterol absorption may be due to the participation of this fraction of cholesterol in the formation of chylomicra.

WINSTON CHURCHILL AND BRITISH POLICY TOWARDS RUSSIA, 1918–1919

by ROSS CHARLES HORNING, JR.[*]

There seem to be certain human events whose explosive natures are of such magnitude that they are beyond the ability of contemporary men either to control or to understand. One such event is the Russian Revolution, the deepest social upheaval that has occurred in the limited history of man.

The decisions reached by the Allied leaders with respect to this revolution were not based upon an understanding of its true meaning, but upon their own Western culture and historical traditions, upon political realities within their own countries, and, before the Armistice of 1918, upon the increased threat that each felt to his physical security as a result of the possible release of German forces in the East for service in the West.

When World War I opened, Winston Churchill was First Lord of the Admiralty for Great Britain. Because of the resignation of Lord Fisher as First Sea Lord, Churchill became the focal point of a political struggle between the Liberals and the Conservatives. As a result, the first Coalition Government of World War I was formed. However, one of the Conservative demands for joining the Coalition Government was the agreement that Churchill would lose his position as First Lord of the Admiralty.

Churchill was absent from the Government from May 1915 until July 1917 when Lloyd George rescued him from his isolation and gave him the position of Minister of Munitions. By sacrificing Liberal strength for Conservative support in December 1916, Lloyd George had succeeded Lord Asquith as Prime Minister. As in 1915, one of the conditions for Conservative support had been the specific demand that Winston Churchill remain out of the Government. Following the favorable report of the Dardanelles Commission in March 1917 concerning Churchill's responsibility in the Gallipoli Campaign, Lloyd George overcame Conservative opposition to Churchill by announcing his appointment on July 19, 1917 as Minister of Munitions, a position that Churchill held until the end of the "Coupon" election in December 1918.

In this election at the end of the war, Lloyd George, by further sacrificing Liberals through the use of the Maurice affair, retained his position as Prime Minister at the head of a Coalition Government now overwhelmingly composed of Conservatives.

It was at this time that Winston Churchill, who had received the highest majority among the members of the Government, was given the position of Secretary of State for War and Air. It was in this new position that Churchill first came into contact with the problem of Allied intervention and the Russian civil war. Contrary to the belief of many, he had nothing whatsoever to do with the original Allied intervention that had occurred after the Brest-Litovsk Treaty in March 1918.

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One year earlier when the 1917 March Revolution suddenly happened in Russia, the Allies had faced a total threat to their physical security from the Central Powers. The reaction of the Allies to this Russian Revolution was not founded upon any understanding of the upheaval that had occurred, but only on how it increased the threat to their physical security through the danger of German troops being transferred to the Western Front. From March 1917 to November 1917, the Allies attempted to force the retention of German forces in the East by encouraging the new Russian Provisional Government to remain in the war and to open an offensive against Germany. This was done through diplomatic recognition and financial assistance. From November 1917 until March 1918, with the rise of the Bolsheviks to power, efforts to keep German units in the East were centered upon the prevention of a Bolshevik-German Treaty. From March 1918 until the 1918 November Armistice and Winston Churchill's entry into the Russian affair, attempts to prevent German soldiers from being shipped from the East to the West were focused upon Allied physical intervention in Russia and upon economic aid to the anti-Bolshevik forces.

The demands for physical intervention following the Brest-Litovsk Treaty of March 1918 can be measured by the increased threat to physical security that each Allied nation felt due to the possible transfer of German divisions from the Eastern Front to the West. The French, who were the closest to the German lines and felt the increased threat to the greatest degree, were the most vigorous in their demands for Allied intervention. While the British, whose country was located farther away from the German lines and who, therefore, did not feel the increased threat as much as the French, also demanded intervention, they did not do so with the sense of urgency displayed by the French. The Americans, who were farthest from the German lines and who felt no increased threat to their physical security through the Brest-Litovsk Treaty, were opposed to intervention, only agreeing to the action because of Allied insistence and the belief that the Czech forces in Siberia were having difficulty in their withdrawal.

When the November Armistice of 1918 was signed, the threat of an increase in physical insecurity through the shifting of German forces was entirely eliminated, leaving the Allies with the significant problem of occupying Russian territory at a time when one of the most ferocious and violent civil wars in history was increasing its tempo. In addition, the Allies, as part of their program to prevent Germany from transferring its troops to the Western Front, were giving substantial economic and technical advice to the anti-Bolshevik forces operating in Russia. The entire question of Allied policy towards the Russian Revolution thus had to be decided.

Only four alternatives were open to the Allies. They could organize a large military invasion to crush the Bolsheviks; they could seek a peaceful solution through a conference of all Russian political elements; they could continue the policy of economic and military aid to the anti-Bolsheviks that they had begun during the war; or they could seek a trade agreement with the Bolsheviks, abandon the anti-Bolsheviks and withdraw their forces from Russia.

This was the situation when Winston Churchill became Secretary of State for War and Air one month after the November 1918 Armistice. Although he technically assumed the position in January 1919, he had received the appointment after the December 1918 "Coupon" election and it was in his new position that he made his first effort to have a program of increased military intervention in Russia adopted. He vigorously presented his plan to the December 1918 meetings of the Imperial War Cabinet, but he was soundly defeated. While he was a member of the British Cabinet, he was not a member of the five-man inner War Cabinet that determined policy and held the decisive power in British politics. Lloyd George, who was chairman of both the British War Cabinet and the Imperial War Cabinet, and who enjoyed both political position and public support, easily turned aside Churchill's bid for an increased program of intervention.

Indeed, after the 1918 Armistice, there was never the slightest possibility that the first alternative, massive intervention in Russia, would be adopted by the Allies. With the threat to physical security removed, the "silent" decisions of the majority of all Allied countries were opposed to any further military intervention. These decisions were quickly communicated to all Allied leaders and, long before the Paris Peace Conference convened, the first alternative open to the Allies, large-scale military intervention, was eliminated. This was reflected in Clemenceau's statements to the Chamber of Deputies, reactions in the American Congress, and decisions both at the Inter-Allied Conference and the Imperial War Cabinet meetings in December 1918.

The second alternative open to the Allies, that of seeking a peaceful solution through a conference of all Russian political sections, was basically a reaction to the knowledge of Allied leaders that military intervention in Russia would not be supported by their people. However, the visible originator of the Prinkipo invitation that followed was neither

Woodrow Wilson nor Lloyd George, but Sir Robert Borden, Prime Minister of Canada, who made the initial suggestion at the Imperial War Cabinet meetings in December 1918. His suggestion was adopted by the Imperial War Cabinet, later known as the British Empire Delegation, and carried through with consummate artistry at the Paris Peace Conference by Lloyd George. It was only after Clemenceau objected to Paris as a site for the conference that Woodrow Wilson was asked to prepare the invitation and to select a different site, ultimately settling on the Prinkipo Island.

Winston Churchill's second and most serious effort to have his more active interventionist program adopted occurred in February 1919 when he dashed to Paris to present his program to the Supreme Council of the Peace Conference. With Lloyd George absent in London, he hurriedly presented his case to Woodrow Wilson and Clemenceau. Wilson firmly indicated that he would withdraw from Russia if he were the sole judge, but, anxious to leave for the United States and with the previous understanding that Lloyd George was opposed to intervention, he stated that he would go along with the decision of the Allies. Utilizing this statement, Churchill energetically and forcefully presented a lengthy case for his policy the following day after Wilson had departed. However, Lloyd George, who was under the impression that Churchill had accepted the War Cabinet's decision against intervention and that he had gone to Paris to suggest forms of economic and technical assistance plus the possible use of volunteer troops other than British in order to aid the anti-Bolsheviks, quickly scuttled Churchill's effort by informing the other Allied leaders and Churchill that he and the War Cabinet disagreed with the policy that Churchill was attempting to have adopted. This was the zenith of Churchill's attempts to have a more active interventionist policy utilized in order to defeat the Bolsheviks. From this time forward his efforts declined until he was reduced to giving ineffective speeches and writing ineffective articles.

Churchill's dash to Paris in February 1919 is often cited as one of four incidents to prove that allied policy regarding the Russian Revolution was inconsistent and indecisive. On the contrary, Churchill's defeat once again indicated that the Allies would not support a program of military intervention in Russia. No other political leader, after being defeated by the British War Cabinet and the Imperial War Cabinet, would have dashed to Paris for yet another attempt at having his policy adopted. In this instance, Allied policy appears inconsistent and indecisive only because of Churchill's unlimited energy and endless determination to seek the adoption of his own program.

With the exception of the Prinkipo invitation, soon to be abandoned, Allied policy was a steady and consistent program of economic and military aid to the anti-Bolsheviks from the 1918 November Armistice until November 1919. Churchill's Paris defeat indicated that the Allies could not be moved from this path.

Although the Prinkipo invitation originated at the highest level of government and, until its abandonment, always moved laterally among the highest Allied political officials, the Bullitt journey to Russia was somewhat different. The evidence seems to indicate that Bullitt was sent on a confidential but only semi-official mission to the Soviet Government by the American Delegation with the assent and approval of the British Delegation. Despite conflicting statements, it does appear that both Wilson and Lloyd George were aware that Bullitt had gone to Russia on what was most likely a political trial balloon from which both could detach themselves if conditions seemed to warrant. At the same time, the possibility that Lloyd George did not know of Bullitt's journey before he left cannot be completely eliminated. In addition, while the United States Department of State was kept informed of Bullitt's journey at every stage and its diplomatic agent in Sweden was responsible for arranging all aspects of the trip, the British Foreign Office in London does not appear to have had any association with the journey. The idea of Bullitt's mission probably originated as a suggestion by House to Wilson, who, in turn, gave his approval. The Bullitt journey was not a continuation of the policy of the Prinkipo invitation, since it lacked the earlier event's broader approach to anti-Bolsheviks as well as Bolshevik Russians. It played an insignificant role in British policy towards Russia. Furthermore, it would seem prudent for serious writers not to accept the Bullitt testimony *in toto* as the absolute and unvarnished historical truth.

The dispatch of British troops to Northern Russia in May–June 1919 is also pointed out as evidence that British and Allied Russian policy was inconsistent and indecisive. In March 1919, the British War Cabinet had decided to continue economic and military aid to the anti-Bolsheviks and, at the same time, to withdraw its forces and those of the Allies from Northern Russia by the coming winter. The public expression of this policy was given in the Parliament by Lloyd George in April 1919.

As a result of this decision, Winston Churchill was placed in charge of the entire evacuation procedure. He raised a volunteer force of eight thousand men to be used in a "disengagement offensive" that he said was necessary and was actually necessary to the evacuation procedure. With his position as Secretary of State for War and Air and his vigorous anti-Bolshevik views well-known, the explanation that withdrawal should begin with a disengagement offensive was never accepted either by Labour or by many writers and historians. All of them have insisted, though incorrectly, that it was another Allied and Churchillian trick to invade Russia, and a further indication that Allied and British policy regarding the Russian civil war was indecisive and inconsistent.

At the same time, because of Kolchak's temporary success in early 1919, Winston Churchill once more attempted to achieve his objective of defeating the Bolsheviks. In June 1919, he again presented a plan to the Supreme Council in Paris whereby Kolchak's army and the Czech units in Siberia would, in Churchill's view, crush the Bolsheviks through a junction with the Allied forces in Northern Russia as they launched their disengagement offensive preparatory to evacuation. In such a manner, Churchill hoped to accomplish his objective of overthrowing the Bolsheviks while still executing and remaining within the narrow confines of the withdrawal policy decided upon by the British and Allied Governments.

With Kolchak's defeat, Allied objections, and Czech opposition, another of Churchill's efforts came to a disastrous end. After General Rawlinson was given the order to begin the disengagement offensive and to execute the evacuation from Northern Russia, Churchill's efforts to aid the anti-Bolsheviks, in keeping with a War Cabinet decision of July 1919, now turned to General Denikin.

However, with Denikin's growing defeat after October 1919, Labour's increasing opposition, the loss of many by-elections, and the difficult domestic problems still unsolved because of the war, Lloyd George announced on 8 November 1919 in his Guild Hall address a complete shift in British policy. From this date onward, the British Government abandoned its steady program of economic and military aid to the anti-Bolsheviks and slowly moved towards a trade relationship with the Bolshevik Government.

With the termination of the aid policy to the anti-Bolsheviks, Winston Churchill was isolated from any effective political agencies through which he might work for an increased military program in Russia. After Lloyd George's November address, he was reduced to producing ineffective articles and speeches on Bolshevism.

Within Britain, there existed three separate views concerning the course that Britain should take with regard to the Russian civil war. Representing the center and the majority in British politics was Lloyd George, while on the left was Labour and on the right was Winston Churchill.

Lloyd George represented the "silent" British citizen, who neither demanded immediate withdrawal from Russia nor a program of increased military intervention, but was willing to support some measure of economic and military aid to the anti-Bolsheviks.

Labour represented a large and vocal segment of British society that demanded immediate withdrawal from Russia and the termination of the economic and military aid policy to the anti-Bolsheviks. They supported this action, not because they understood the Russian revolution to any greater degree than did Churchill, but because they felt that the capitalistic nations were attempting to crush the first labour state in history. In actual fact they had little in common with the Bolsheviks, but the thought that this was the first attempt to establish a truly socialist society blinded them to their differences.

Winston Churchill was the dynamic exponent of the minority on the right, who demanded increased physical intervention in Russia in order to overthrow the Bolshevik Government. At the same time, his knowledge of the Russian civil war was no greater than that of any other contemporary political leader. In all of his efforts to have an interventionist program adopted and in his speeches and articles, he viewed Bolshevism as destructive anarchism, nothing more. He had neither understanding of nor sympathy for the Russian peasant mass. His opinions and decisions were based solely upon his own Western heritage, especially as reflected in the British institutions of private property and parliamentary procedure.

At the same time, none of the other political leaders of the day seemed to possess any greater understanding of the social cataclysm that had occurred in Russia. All decisions were based upon political realities within each Allied country, firmly tied to their own Western cultural patterns and traditions.

Winston Churchill's proposal for a large military invasion to crush the Bolsheviks was blocked by his colleagues. But the contrary policy of a peaceful solution through a Prinkipo conference of all Russian political elements was quickly abandoned. The middle-of-the-road policy of economic and military aid to the anti-Bolshevik forces already in Russia was adhered to as long as it made more friends at home than enemies. And when Lloyd George eventually abandoned this course too, the gradual working out of a *modus vivendi* with the Bolsheviks was embarked upon instead.

All four possible alternatives in Allied policy toward Russia were present in the postwar situation, but in the decisive first year from November 1918 to November 1919 only the alternative of limited economic and military aid to the anti-Bolshevik forces had any general and consistent support either at the top level of Allied diplomacy or in the silent decisions of the popular majority.

SOME ASPECTS OF INTERNATIONAL CONTROL AND PEACEFUL USES OF ATOMIC ENERGY

by KRISHEN DAYAL MATHUR *

INTRODUCTION

The idea of the atom—that matter ultimately consists of an aggregate of minute, indivisible, imperceptible units—may be traced back to ancient Hindu and Greek philosophers. The development of atomic energy, however, is primarily a result of recent scientific discoveries, and the atom gained international significance only with the development of atomic bombs during the Second World War.

Atomic energy has raised varied problems since its inception in 1945, such as the danger of atomic war, the threat of thermonuclear destruction, the effects of radioactive dust, and the fear of mass annihilation through space satellites. It has, however, also raised great hope for economic prosperity through the peaceful utilization of atomic energy, and has begun to lift the veil separating the worlds beyond, thus giving rise to the hope of the conquest of outer space.

To date, world attention has focussed mainly on two aspects of atomic energy: how to stop future atomic annihilation; and what actions may be taken to direct atomic energy to the betterment, rather than the detriment, of mankind. Although this problem primarily involves the atomic powers, it is international in scope because it affects all peoples. Hence, since its very inception, the problem of atomic energy has been discussed in the United Nations.

THE UNITED NATIONS ATOMIC ENERGY COMMISSION

The United Nations Atomic Energy Commission convened in 1946 to formulate a plan of atomic control, while the United States still had a monopoly over the production of atomic weapons.

The United States' policy favored the establishment of an international atomic control authority. Secretary of War, Henry L. Stimson's memorandum, and the Acheson-Lilienthal Report of March 1946, considered that an international atomic control plan was feasible. President Truman invited Prime Ministers Clement Attlee and Mackenzie King in November 1945, to formulate a plan of international control authority under the aegis of the United Nations. Accord was reached at the Moscow Conference among the United States, the United Kingdom, and the Soviet Union on the establishment of an atomic energy com-

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mission, which was to make inquiries into all phases of atomic energy and report to the Security Council. The General Assembly passed its first resolution on January 24, 1946, establishing the United Nations Atomic Energy Commission.

The Commission's first meeting was held on June 14, 1946. The United States' plan presented by Bernard Baruch differed from the Acheson-Lilienthal Report broadly in the following respects: it proposed abandonment of the veto on atomic energy matters; it sought a guarantee against war itself, thus introducing the question of disarmament and condign punishments as a basis of further discussions; and, it envisaged a system of control through stages, placing the question of prohibition of weapons at the tail-end of the "stages of control".

The Soviet plan presented by Andrei A. Gromyko on June 19, 1946, was diametrically opposed to the United States' plan. It envisaged holding two conventions: one, prohibiting the production of atomic weapons for military purposes; and, the other, establishing a system of control to ensure the strict observance of the terms of the above-mentioned convention. It also suggested establishment of two committees: one, to collect scientific information; and, the other to prevent the use of atomic energy for the detriment of mankind.

These two plans were discussed in various committees of the Commission which were formed from time to time. The members of the Commission strongly supported the principle that an effective system of safeguards is essential for the formation of a control authority. Although most of the delegations approved the Baruch plan, elements of caution and compromise were present. Canada, France, the Netherlands, and Poland suggested that discussion of the veto was premature. Some delegations also thought that the two plans were not irreconcilable and could furnish an adequate basis for constructive work.

However, when actual discussions started in Committee 1, agreement could not be reached, either on the powers and functions of the authority or on the question of prohibition of atomic weapons.

The only sign of compromise emerged from the Scientific and Technical Committee, which met in secret sessions. It submitted a comprehensive report on the technical aspects of atomic energy, stating that an effective control of atomic energy is technologically feasible, and that applications of atomic energy could be useful in medicine, industrial chemistry, and nuclear research. This was the only report supported by the Soviet Union.

The success of the Scientific and Technical Committee encouraged the members of the Commission to seek a solution on "safeguards". General agreement appeared to be forthcoming on periodic inspection, licensing of chemical extraction plants, weighing and analysis of material, and control of Isotope Separation Plants. The Commission members favored the idea of conducting aerial inspection and ground surveys to detect clandestine activities.

Unfortunately, this was the last sign of cooperation exhibited in the Commission. When the submission of a report to the Security Council was raised, the Soviet Union requested postponement until the arrival of its permanent representative, Gromyko. The refusal of this request by the majority resulted in a deadlock. Despite Soviet objections, the majority decided to prepare a report, whose "Findings and Recommendations" were drafted by Baruch. The Soviet Union boycotted the meetings.

The First Report of the Commission recommended establishment of an international control agency, with broad powers of inspection and control. It favored prohibition of the veto on questions of atomic energy. It recommended promotion of international exchange of basic scientific information on atomic energy. It advocated a comprehensive system of inspection and control with effective safeguards, although it stated that the agency was to interfere as little as possible with the operations of national governments.

The Security Council discussed the Commission's report from January 4 to March 10, 1947, and requested the Atomic Energy Commission to prepare a draft treaty acceptable to all the members, incorporating the proposals specified in the General Assembly resolutions of January 24, and December 14, 1946. The Soviet Union submitted amendments and additions to the First Report of the Commission, which broadly related to the veto question, functions and powers of the proposed agency, and inspection and control.

The Soviet amendments and additions were rejected by the Commission. The Commission, however, prepared a report on the functions and administrative aspects of the agency, based on the recommendations of the First Report. The Soviet Union refused to participate in these proceedings until an accord was reached on the formation of the agency itself. Nevertheless, the report broadly considered the problem of security; research and developmental activities; location and mining of ores; processing and purification of source material; stockpiling, production, and distribution of nuclear fuels; design, construction, and operation of nuclear plants; and the powers and limitations of the proposed agency in relation to inspections, surveys, and explorations. The Commission recommended that decisions concerning the production and use of atomic energy should not be left in the hands of nations, and that the agency should be given means of preventing atomic warfare, including rights of inspection of national plants and facilities. The agency, however, was to have due regard to the domestic laws and customs of states, while conducting surveys and explorations.

The Soviet Union submitted new proposals on June 11, 1947. These proposals elaborated on the inspection and control functions. The recommended inspections were to be periodic rather than continuous, although special investigations could be carried out. In addition, the Soviet Union suggested that atomic production should be on a quota system. These proposals were rejected by the Western Powers on the grounds that they aimed at the unilateral disarmament of the United States, provided for full dissemination of scientific and engineering knowledge, legalized production of nuclear fuel by all nations, and did not define the system of inspection, thus reducing the possibility of an effective control system.

On September 11, 1947, the Commission submitted an interim Second Report to the Security Council, stating that agreement was not forthcoming. The Third Report of the Commission submitted on May 17, 1948, frankly admitted that there existed no basis for agreement and, therefore, recommended that the work of the Commission should be suspended.

The General Assembly, in its resolution of November 4, 1948, approved the recommendations of the Commission, expressed concern at the impasse reached in the Atomic Energy Commission, and called upon the six sponsors of the General Assembly resolution of January 24, 1946 (Canada, France, China, USSR, UK, USA) to consult and report to the Assembly. It also requested further consultations among the Commission members.

In the Commission, the Soviet Union revised its original proposals of holding two conventions—one for the prohibition of atomic weapons and the other for establishing a control system—simultaneously, instead of the one following the other. This proposal was rejected on the grounds that it did not add anything new to the previously submitted proposals. The six sponsors also reported that no useful purpose could be served by further discussions. The five powers (Canada, China, France, UK, USA) also submitting a separate memorandum to the General Assembly, blaming the Soviet Union for the failure of the Commission.

The fourth session of the General Assembly, for the first time, showed signs of unrest among the smaller powers. Draft resolutions submitted by Argentina, India, and Haiti, respectively, proposed renunciation of atomic weapons in future warfare, reference of the question of atomic energy control to the International Law Commission, and the outlawing of atomic weapons as military armaments. The Western Powers assured the other United Nations members that they would consider any proposal or suggestion that might lead to a more workable plan. The General Assembly passed a resolution on December 13, 1950, requesting the Atomic Energy Commission to continue negotiations. However, when the Commission met again in 1950, the Soviet representative withdrew from the Commission on the question of Chinese representation. This was the last meeting of the Commission. The Atomic Energy Commission was officially termined on January 11, 1952.

The Commission failed because agreement could not be reached on a number of points: the question of the veto; prohibition of atomic weapons; inspection, control, and sanctions; and the stages of control. Undoubtedly, of all the causes of the Commission's failure, the most basic one was that neither the United States nor the Soviet Union was willing to reach an agreement. The United States wished to maintain its position of atomic monopoly as long as possible. The Soviet Union, on the other hand, wanted to stall for time, so that it could also manufacture the most important military weapon. However, other causes—the endless quibbling, the protracted discussions, the complicated committee-system, the repertoire of technical experts and atomic politicians, as well as the mutual apprehensions of the Great Powers, the adamant attitude over the respective proposals, the veil of secrecy surrounding the atom, and the passive role of the other members—all contributed to the failure of the Commission.

Nuclear Explosions and Atomic Radiation

The failure of the Atomic Energy Commission coincided with the first atomic explosion in the Soviet Union in September, 1949. This resulted in the race for the production of better and more powerful atomic bombs. The United Kingdom also exploded an atomic bomb on October 3, 1952, and became the third atomic power. The thermonuclear weapon was tested by the United States on November 1, 1952, and by the Soviet Union on August 8, 1953. Thus, within four years of the failure of the Commission, the world was threatened with destruction by hydrogen weapons possessed by both the United States and the Soviet Union.

The race for armaments eclipsed the question of control of atomic weapons. Since total control of atomic weapons had proved impossible in the Atomic Energy Commission, a fresh start was made to devise a plan of atomic disarmament rather than atomic control.

The question of disarmament was first raised during the second half of the first session of the General Assembly in September, 1946. Molotov proposed that member nations submit full information of the strength, size, and location of their armed forces. This proposal was perhaps an answer to the United States' contention in the Atomic Energy Commission that the question of prohibition of atomic weapons is a disarmament question and, therefore, should not be considered in the Commission. Molotov's proposal resulted in the creation of a Commission for Conventional Armaments on February 13, 1947. The Commission for Conventional Armaments, however, was not required to deal with atomic energy because this task was entrusted to the already functioning Atomic Energy Commission. The Commission for Conventional Armaments did little work from the very beginning.

On October 24, 1950, President Truman proposed that since neither of the two commissions—Atomic Energy Commission and Commission for Conventional Armaments—had proved to be successful, they should be combined into one—the Disarmament Commission. The General Assembly established a committee to study this question, and upon its recommendation established a Disarmament Commission on January 11, 1952.

The Disarmament Commission discussed questions of control of both conventional and atomic weapons; the disclosure and verification of national armaments and armed forces; the establishment of inspection and control system; the reduction, limitation, and regulation of military weapons and forces. None of these questions was resolved. The divergence of the United States and the Soviet positions became evident the very first year of negotiations—the United States insisting on disclosure, verification and control through stages, and the Soviet Union adamant on the outright prohibition of atomic weapons. On April 8, 1953, the General Assembly passed a sombre resolution requesting the Commission to continue negotiations.

Some hope for conciliation was raised after the Korean Armistice of July 27, 1953, but to no avail. The control of atomic energy was impossible without an agreement between the United States and the Soviet Union, and the Disarmament Commission was helpless in the absence of such agreement. Taking this factor into consideration, the General Assembly recommended on December 15, 1953, that the Disarmament Commission should establish a subcommittee consisting of the representatives of Canada, France, the USSR, the United Kingdom, and the United States, to seek an acceptable solution. To date, the subcommittee of the Disarmament Commission has not been able to arrive at a compromise.

Two conclusions follow: one, that international control of nuclear weapons is not possible because of their military significance; two, that because of the military significance of the atom, the major atomic powers—the United States and the Soviet Union—are more interested in keeping ahead of each other's military potentialities than in agreeing on a system of international control which, they fear, might jeopardize their national security.

The race for armaments and its concomitant experimental explosions of nuclear weapons created the problem of atomic radiation. This question was first raised in the United Nations after the United States' thermonuclear detonation of March 1, 1954, in the Bikini Atoll area.

The larger problem of control of atomic tests, however, was discussed in the General Assembly. Shortly after the thermonuclear explosion of March 1, 1954, Ernest Casey, the Australian Minister for External Affairs, and Prime Minister Nehru requested the Disarmament Commission to discuss immediately the question of control of atomic weapons. The subcommittee of the Disarmament Commission, which met in London in May, 1954, had already arrived at a stalemate, and did not discuss the specific proposal submitted by India.

The question of atomic radiation, however, was discussed at the tenth session of the General Assembly. The Assembly appointed a Scientific Committee on the Effects of Atomic Radiation, consisting of the nominees of the governments of Argentina, Australia, Belgium, Brazil, Canada, Czechoslovakia, Egypt, India, Japan, Mexico, Sweden, the Soviet Union, the United Kingdom, and the United States, to make a detailed study of the effects of atomic radiation. The Committee reported in April 1958, that atomic radiation produces mutations in genes, and recommended that every step should be taken to minimize irradiation of human populations. The Committee, however, found itself unable to recommend suspension of nuclear tests, because of inadequate data and the political significance of the question.

INTERNATIONAL ATOMIC ENERGY AGENCY

The emergence of the problem of atomic radiation and the failure of the Disarmament Commission precipitated a crisis in the United Nations by 1954, the Soviet Union and the major Western Powers had failed to agree on any aspect of control since the formation of the Atomic Energy Commission in 1946. There was a growing feeling at the eighth session of the General Assembly in September 1953, that increasing hostilities among the great powers could embroil the entire world in an atomic holocaust. Several small nations joined to stress the need for peaceful utilization of atomic energy and the proportional reduction of arms and armaments, as well as the establishment of a collective security system outside the great power influence. A suggestion of the major Western Powers regarding the utilization of expenditures saved from disarmament for peaceful applications of atomic energy, did not gain approval of the smaller powers because that assistance was contingent upon disarmament which was a distant goal.

This was the first time when a significant number of smaller countries had taken a stand at variance with the policies of the major powers. In order to satisfy the growing demands of the smaller nations, the heads f the governments of France, the United Kingdom, and the United tates, assembled at Bermuda from December 4 to 7, 1953. The Ber-uda Communique assured the world that the strength of the West ould not be invoked in any cause of wrongful violence.

However, the most significant result of this unrest was President isenhower's address to the General Assembly on December 8, 1953. he President proposed that the "governments principally involved" hould make joint contributions from their atomic stockpiles exclusively r peaceful purposes. The President also recommended the establish-ent of an International Atomic Energy Agency to encourage world-ide investigation into peaceful applications of atomic energy, to diminish e potential destructive power of atomic stockpiles, and to initiate an ra of cooperation.

The main aspect of the President's proposal was the separation of e two issues related to the atom: the question of control of atomic eapons and the harmful effects of atomic explosions; and, the question f utilization of atomic energy for peaceful purposes. The develop-ent of peaceful uses of atomic energy henceforth was to precede the estion of nuclear disarmament, and not to follow it.

The President's plan gained world support, except for the Soviet re-tion which was unsatisfactory. The Soviet Union argued that the oposal only aimed at diversion of a small part of fissionable material d, therefore, did not remove the threat of atomic war.

The Soviet Union, however, did not close the door to negotiations hich were conducted through diplomatic channels. Perhaps a con-ibuting factor for the cooperation of the Soviet Union was the full pport given by the smaller nations to the President's plan. Marshal ulganin assured President Eisenhower at the Geneva Summit Con-rence in July, 1955, that the Soviet Union would cooperate with the nited States in the formation of the Agency.

At the ninth session of the General Assembly (1954) it was also cided that a scientific conference on the peaceful uses of atomic energy ould be held under the aegis of the United Nations in 1955, an idea st conceived by Admiral Strauss. Two such conferences have been ld so far—August 8 to 20, 1955; and September 1 to 13, 1958—both Geneva. At each of these conferences, the scientists of the United ates and the Soviet Union demonstrated a spirit of harmony and co-eration.

With regard to the Agency, the United States took positive steps to ake its formation a success. The Congress of the United States author-ed the President to enter into international arrangements on non-ilitary applications of atomic energy. The United States invited the ernments of Australia, Belgium, South Africa, Portugal, France

Canada, and the United Kingdom, to prepare a draft of the statute of the proposed Agency. The elimination of the Asian, African, and the Latin-American countries from the initial stages of negotiations was resented at the ninth session, but defended on the ground that the selected countries were producers of source or fissionable material. However, at the tenth session (1955), the United States announced that in addition to the above countries, invitations had been extended to Czechoslovakia, Brazil, India, and the Soviet Union. These countries, with the original eight form a Working Level Group to discuss the draft statute of the Agency.

The Group unanimously agreed on a draft statute, taking into consideration the debates of the General Assembly and the comments received from various governments. This draft was discussed at the Statute Conference at New York, and adopted with certain modifications on October 26, 1956, and ratified on July 29, 1957. The modifications dealt primarily with the Agency's functions, membership, executive and controlling authority, "agency projects", "agency safeguards", finance, and settlement of disputes.

The statute is ambiguous, verbose, repetitious, and discontinuous in thought. The problems that may arise under the statute in the future may be briefly stated as follows:

The functions of the Agency are broad and flexible. The Agency's tasks comprise the fields of education, commercial transaction, establishment of plants and facilities, application of safeguards to prevent diversion of fissionable material and to maintain standards of health and safety. They also envisage the enlargement of the Agency's activities for the establishment of world-wide disarmament. All these questions are broad enough to create new problems in the future. The admission of new members as well as the representation of China will also create problems. The Agency's real controlling authority is the Board of Governors, with broad powers of control and administration, while the annual General Conference of all members has limited authority. Future problems may concern the question whether the powers of the General Conference should be expanded, or whether they are sufficiently flexible to control the Board. Since the Agency's staff has the power to inspect plants and materials of the projects undertaken by the Agency, an impartial staff will have to be selected so that professional secrecy will be maintained. Furthermore, the question of the extent of the Agency's right to inspect nuclear projects in any state may create friction between the recipient state and the Agency. Difficulties might also arise if the demand for fissionable material and technological assistance exceeds the supply made available by the "donors".

The most controversial phase of the Agency's activities is one concerning "agency projects" and "agency safeguards", including inspection, control, and sanctions in case of violations. By "agency projects" is meant the projects undertaken by member states in which Agency assistance is provided. Since the statute envisages practically total control of the national atomic projects in which Agency assistance is given, serious difficulties will arise in making such assistance available. The term Agency projects is, therefore, a misnomer, because the project is in reality initiated by a state, but becomes an agency project even if the smallest amount of aid is given by the Agency. Since Agency control cannot be extended to any state which obtains assistance from other sources, the practical applicability of this provision will create some difficulties, as a large number of states would automatically remain outside the Agency's jurisdiction. The question of sanctions will arise only if a recipient state fails to comply with the directions of the Agency. Noncompliance could result in expulsion of the member concerned, and recovery of the materials provided to it by the Agency. If noncompliance results in a threat to peace because of diversion of material to military purposes, the question would fall under the jurisdiction of the General Assembly, and the Security Council, upon which falls the responsibility of maintenance of world peace and security.

Major problems of finance would concern the expenditures incurred in the provision of materials and facilities to the recipient, costs of implementing the control system, and costs of acquiring or establishing Agency plants—such costs being divided between the recipients, the Agency, and the contributory states. The settlement of disputes between the Agency and a state would be determined by a contract, as well as the applicability of the provisions of the International Court of Justice.

It is too early to determine whether the statute is flexible or needs modification. The important fact is that the statute was adopted unanimously, demonstrating that compromises can be effected when nations have a will to do so. The future developments of the Agency will depend upon the impartial direction of the exceutive branch and the interpretations given to various paragraphs of the statute.

PEACEFUL APPLICATIONS OF ATOMIC ENERGY

The establishment of the Agency, for the first time, brought cooperation between the United States and the Soviet Union on a matter dealing with atomic energy. Furthermore, it pacified the smaller nations which were greatly desirous of improving their economic conditions through the use of atomic energy. However, the peaceful applications of atomic energy are not the exclusive province of the Agency. Nations will continue to increase their atomic energy requirements through bilateral and multilateral arrangements, as well as private commercial enterprises. Despite all these avenues of atomic energy development, the solution of great economic problems is not simple, because the costs of atomic production are high, trained personnel is at present too limited to reach all areas of the world, and a majority of nations are on too low an economic level to be able to afford to embark on atomic development programs.

A country's utilization of atomic energy will be contingent upon the extent of its industrial development, availability of nuclear source material, its economic potential, and its essential needs. The use of atomic energy for electricity, heat, propulsion, and radiation requires construction of reactors and great technological skill, and is possible only in countries which are either industrialized or in a stage of industrial growth. Underdeveloped countries will find that economic prosperity through atomic energy is a long-range objective. Nevertheless, if properly directed, social and economic progress can be achieved in the underdeveloped countries through the use of atomic energy through industrial applications (e.g., instrumentation and tracer uses); plant and livestock breeding; agriculture, health, and medicine.

The industrialized countries have already planned extensive atomic energy development programs, individually as well as through concerted action. Aside from the leaders of atomic energy development, the United States and the Soviet Union, several European countries have greatly expanded their atomic energy programs. The peaceful applications of atomic energy in the United Kingdom since the construction of the Calder Hall plant, probably surpass any other atomic energy peaceful establishments. Concerted action of the European powers through the six-power Euratom pact and the sixteen-power OEEC organization would, within the next two decades, not only satisfy Europe's energy requirements, but place it in a position of competing with the major atomic powers for the world market. In the future, economic rivalries may arise between national and regional atomic energy organizations, among the regional organizations themselves, and between one industrialized nation and another.

The problems of underdeveloped countries are different from those of industrialized countries. The high rate of population growth in underdeveloped countries, and the difficulty of producing energy in these areas, make it difficult to evaluate systematically the impact of the development of atomic energy on their economies. Furthermore, the stages of economic growth are so varied that no general statement can be made regarding the development of atomic energy. Japan is comparable to the industrialized countries of Europe, and will accelerate its atomic energy programs, both to satisfy its energy requirements and to enter world market. Although little is known about the state of atomic energy development in China, its huge area and population, potentialities of source material, as well as the technological assistance provided by the Soviet

Union, would contribute to the development of atomic energy in this area. Similarly, India and Brazil have an abundance of nuclear source material, and are in a state of technological growth. Consequently atomic energy development in these areas may be expedited.

Furthermore, development of nuclear energy through the application of fusion reaction would make possible the use of the oceans as a virtually inexhaustible source of fuel, and expedite the atomic energy development programs in both the industrialized and the underdeveloped countries.

Future applications of atomic energy will create problems in both the industrialized and the underdeveloped countries. In the underdeveloped countries, problems will be created by the growing demand for energy and the low levels of national economy. In industrialized countries problems would arise in the realm of competition, and lead to a more acute need to control nuclear weapons, as these can be easily manufactured from the same plants that produce atomic energy for peaceful purposes.

CONTROL OF ATOMIC ENERGY

Improvements in nuclear weapons have brought the world to a stage where an overnight attack by weapons suitably directed could decimate the population of any nation. Mankind has survived the past few years because the United States and the Soviet Union have preferred not to use nuclear weapons in the settlement of international disputes. But the danger of nuclear destruction is growing because of the invention of ever increasingly destructive weapons and because more and more nations may become nuclear powers. The United Kingdom has already become a nuclear power by detonating a thermonuclear weapon in September 1958, and there are indications that France is soon going to explode an atomic weapon.

Since the seeds of warfare are inherent in human society and nuclear power is here to stay and probably will be used for the settlement of disputes in the future, it has been argued that limited nuclear warfare is the only alternative to human destruction through an all-out nuclear war and that this is the only means of achieving maximum deterrence with minimum risk. Similarly, it has been argued that nations should agree to use atomic rather than thermonuclear weapons, whenever force becomes necessary to resolve international conflicts. Both these suggestions are open to criticism. The concept of the use of tactical nuclear weapons is defective because a limited nuclear war once started has the possibility of developing into an all-out war. Furthermore, it will give rise to increased radiation with deleterious effects to mankind, particularly to the inhabitants of the neighboring states. And, settlement based on "built-in" restrictions is difficult to follow through, particularly on the verge of defeat. The suggestion for agreement on the use of atomic rather than thermonuclear weapons is unacceptable because nations could well produce atomic weapons with sufficient destructive power to destroy all civilization.

Another control problem concerns the suspension of nuclear tests to prevent increased atomic radiation. It is generally agreed that atomic radiation is harmful to man and, that its deleterious effects can be passed on to future generations. Despite a heated controversy over the question of suspension of nuclear tests, the "East-West" scientific conference at Geneva (1958) agreed that it is possible to detect and identify nuclear explosions with a global network of about one hundred and seventy stations supplemented by aircraft and satellites. Future political discussions at Geneva in November 1958, will determine whether such an agreement will be workable.

The problem of the control of atomic radiation, however, cannot be solved merely by the suspension of nuclear tests. Peaceful applications of atomic energy may also give rise to radiation. Increased use of atomic energy may intensify the problem of disposal of radioactive wastes. Radiation hazards may also result from seepage and from accidents occurring either in plants or during the transfer of fissionable material. Precautions will have to be taken in protecting the health of the workers, and the health of the inhabitants of the area where atomic plants are located. In addition, the long-range problem of increasing radiation in the atmosphere will be ever present. These questions should form an important element of inquiry of the international organizations such as IAEA, WHO, ILO, as well as the national scientific bodies.

The problem of diversion of atomic materials for military purposes, however, is related to the overall question of prohibition and control of atomic weapons. Since nuclear weapons form the basis of the defense systems of the major powers, agreement on a plan of inspection and control has been impossible. Therefore, efforts are now being made to eliminate the nuclear armament race rather than to eliminate nuclear weapons. It is questionable whether the prohibition of nuclear weapons would serve any useful purpose today. It may, therefore, be advisable to elicit some form of agreement among the nuclear powers, so that more countries may not join the nuclear armament race. Smaller nations may play an important role in helping to resolve the deadlock over this issue.

Control of Outer Space

Since nuclear weapons, through the media of rockets, space ships, and earth satellites may be accurately delivered on enemy targets, the varied problems arising out of man's ascent into outer space require careful study.

The launching of earth satellites has given rise to the idea that the safety of the major powers depends upon achieving space superiority.

Hence, the primary motive for the development of space technology would be national defense. If some system of international control is not devised today, the combative and competitive instincts of man may jeopardize the very question of survival on earth, as military applications of outer space may provide quicker means of destruction.

The exploration of outer space, in itself, is a challenge to the ingenuity of human skill. The insatiability of the human spirit for adventure will inspire man to explore the moon and the planets. Furthermore, scientific investigations could solve the mysteries of the environment, e.g., questions concerning gravitational force, magnetic field, air-glow and aurora borealis. In order to achieve some progress in space flights, the dangers of space travel, e.g., intense radiation, atmospheric friction, weightlessness, will have to be solved. If it is possible to inhabit other planets and asteroids, perhaps the world's population problem can be ameliorated. Furthermore, inquiries into outer space may suggest some method of eliminating the increased radiation of our atmosphere and the disposal of radioactive wastes by hurling them out by means of rockets. Peaceful applications of outer space might include harnessing the energy of the sun and the stars for electricity and power; control of rainfall, wind-currents, and the seasons.

If nations resolve disputes within the framework of law rather than through the use of force, the legal problems of space explorations may assume prominence. These problems may range from the question of sovereignty of nations over space, to questions such as regulation of space traffic and colonization of outer space.

The question of state sovereignty was discussed at the annual conference of the American Society of International Law at Washington in 1956. The conference discussed the concept of "territorial space" extending up to thirty miles above; and "contiguous space" extending from thirty to three hundred miles. An opinion was extended by some that state sovereignty should extend thirty miles, with the right of transit of nonmilitary vehicles in "contiguous space". The area above contiguous space, called "outer space" should be free for passage of all instruments without restrictions. These discussions, however, are of a preliminary nature, and require further consideration.

The question of sovereignty over territories in outer space will gain significance soon after the conquest of the moon. There appears to be a general feeling that a celestial body discovered by one nation should not be appropriated by it. The question of space traffic is a distant one, and need not be discussed now. However, before such questions attain increasing importance in the future, it may be advisable to attain some preliminary agreement on the broad questions concerning the sovereignty of states and the regulation of space flights.

The military, peaceful, and legal questions arising out of man's ascent into outer space require the establishment of an international space authority. Unless some form of international authority is created now, the military potentialities of outer space would be exploited to such an extent that the formation of an international space authority would become as difficult as the formation of an international atomic energy control authority today. The chances of establishing an international authority are brighter today because we know very little about outer space, and both the United States and the Soviet Union have proposed the formation of such an authority.

In view of past experiences, it would be desirable if the initial efforts of the United Nations were not to be directed toward the formulation of a comprehensive control plan which might prove unworkable or be rejected by either of the two major powers. Hence, efforts should be made to elicit agreement on a minimum plan of inquiry and investigation acceptable to both the United States and the Soviet Union, rather than a comprehensive plan of inspection and control that may eventually be rejected. For this purpose, a program of scientific rather than military inquiries should be initiated by the United Nations. Such a program can be expanded later when the need arises. Since the challenge of unravelling the mysteries of the universe is so gigantic that it may require centuries, a concerted effort of all nations would be most desirable in order to advance human welfare and progress, to further scientific understanding of the nature of the universe, and to reduce international tensions. Such cooperation, if it becomes a reality, in turn, would reduce the dangers of destructive applications of outer space. On the other hand, separate studies conducted in secrecy by individual nations, even for peaceful purposes, would breed suspicion, increase international rivalry, and lengthen the process of gaining knowledge of the universe.

CONCLUSIONS

Broadly, the following conclusions may be derived from this study:

1. The question of control of atomic weapons basically concerns the security of major powers and, therefore, no agreement has been possible on the prohibition and control of nuclear weapons. An effective control system could only have been possible in the initial stages of atomic inventions. The greater the delay, the more difficult it became to establish an effective control system.

2. Since an effective atomic control system is not feasible today, attempts should be made to elicit agreement on isolated issues, such as reduction of arms and armaments, suspension of nuclear tests, elimination of surprise attack, rather than on a plan of overall control. These individual agreements could eventually lead to the establishment of a control system.

3. Discussion of atomic energy problems should not be composed of a commission whose members are the same as that of the Security Council. It should have wide geographical representation.

4. Although smaller nations are helpless when basic disagreement exists between the United States and the Soviet Union, the smaller nations may, through concerted action improve the chances for compromise and eventual accord.

5. For the preservation of civilization and security, it is imperative that some basic agreement on suspension of nuclear tests be forthcoming before half a dozen nations detonate atomic weapons and join the nuclear race.

6. Since nations can develop atomic energy programs through bilateral and multilateral agreements, the primary task of the International Atomic Energy Agency should be educational rather than commercial. Commercial enterprises undertaken by the Agency (even if such a demand is created by loosening its control restrictions) would place it in competition with the national and private commercial enterprises.

7. Since scientific conferences on the atom have been successful and "East-West" cooperation has first been achieved on the peaceful applications of atomic energy, efforts should be made to hold scientific conferences on rocketry and outer space. Furthermore, scientific consultations on the technological feasibility of implementing a control system should be encouraged.

8. In order to establish a workable system of control, discussions should be held privately; closed diplomacy is preferable to open debates in the General Assembly, which is invariably used for propaganda purposes.

In view of these conclusions, it may be suggested that in the establishment of an outer space authority, primary attention should be given to peaceful applications. It would be advisable to immediately form a committee for outer space to elicit the cooperation of the major powers for the peaceful utilization of outer space. The formation of the committee should not be delayed or made contingent upon agreements on other political issues, including the question of disarmament. It should be the task of the United Nations, by means of independent inquiries and investigations, to awaken mankind to the dangers of military applications of atomic energy and outer space, and to create a conciliatory atmosphere in which scientific discoveries can take place. For, scientific discoveries are made according to the tempo of the times. It is the training of the mind which directs man to carry out experiments in a field of study essential to the needs of society. Thus, there is hope ahead for mankind, as well as the abysmal danger of self-destruction.

INVESTIGATIONS ON THE MECHANISM OF BIOLOGICAL HYDROXYLATION OF AROMATIC COMPOUNDS

by HERBERT S. POSNER*

An attempt has been made in this dissertation, using the liver microsomal hydroxylating system as a model (Mitoma, Posner, Reitz, and Udenfriend, Arch. Biochem. Biophys., *61,* 431 (1956)), to investigate the validity of some of the mechanisms which have been proposed for the hydroxylation of aromatic compounds to phenols.

In preliminary studies on this system, it was found that there appears to be a family of hydroxylating enzymes present in the microsomes. Thus, acetanilide, naphthalene, and quinoline appear to be hydroxylated by different enzymes as evidenced by the differential inhibitory effects produced with Tween-80, 2,2′-dipyridyl, and diethyldithiocarbamate, and by stimulation of enzymatic activity after intraperitoneal administration of 3,4-benzpyrene. In addition, aniline and acetanilide were hydroxylated in the *ortho* as well as in the *para* positions by dog and cat liver preparations, while rabbit liver preparations brought about hydroxylation almost exclusively in the *para* position. This would indicate the possibility of there being different enzymes, in addition, for these two reactions.

Since dihydrodiols have been proposed as intermediates in phenol formation, an investigation was made on the relationship between these two types of compounds. It has been found, on the microsomal level, as has been found previously in *in vivo* studies, that benzenoid compounds yield little if any dihydrodiols although they can be hydroxylated to phenols. In contrast, compounds having condensed ring systems appear to yield both dihydrodiols and phenols. Thus, naphthalene yields 1-naphthol as well as naphthalene-1,2-dihydro-1,2-diol, and quinoline yields 3-hydroxyquinoline as well as an exteremely acid-labile metabolite which behaves like a dihydrodiol in that it yields 3-hydroxyquinoline upon mild acidification.

In the case of the hydroxylation of naphthalene, it has been shown that the dihydrodiol and 1-naphthol are not interconvertible, and therefore do not serve as precursors for each other. They are formed in the ratio of about ten to one. Synthetic *trans*-naphthalene-1,2-dihydro-1,2-

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diol is not metabolized by the microsomal system, whereas, 1-naphthol is further metabolized in the presence of TPNH but not DPNH, presumably by further hydroxylation. Lack of permeability of naphthalene dihydrodiol to the microsomes is probably not a factor in its lack of further metabolism since it can be found in the supernate after sedimentation of the microsomes, after it has been generated from napthalene. Caffeine seems to stimulate the formation of 1-naphthol without affecting the formation of the dihydrodiol, as has been noted previously by another author. However, it was found here, that caffeine would prevent the disappearance of 1-naphthol by the miscrosomal system. Thus it might, in this way, give a false impression of stimulation.

Quinoline was hydroxylated to both an acid-labile metabolite, yielding 3-hydroxyquinoline upon acidification, and to 3-hydroxyquinoline, in the ratio of about one to one. On the basis of inhibition studies with diethyldithiocarbamate and cysteine, the acid-labile metabolite does not appear to be an intermediate in the formation of 3-hydroxyquinoline. That 3-hydroxyquinoline is not an intermediate in the formation of the acid-labile metabolite is evidenced by the fact that on determination of the time curves of formation of the two compounds, it is the acid-labile metabolite which is formed first. In the presence of cysteine, the formation of the acid-labile metabolite appears to be almost completely suppressed when assayed in the usual way, by acidification at room temperature. However, if the acidic solution is placed in boiling water for about four minutes, from 75 to 100 per cent more 3-hydroxyquinoline could be detected than could be accounted for by the original acid-labile metabolite, suggesting the formation of a second acid-labile metabolite. The formation of this additional metabolite could not be confirmed by paper chromatography. Glutathione and ascorbic acid could not produce the effect of cysteine, indicating that cysteine is probably not acting simply by keeping some factor in a reduced state. 3-Hydroxyquinoline is further metabolized in the presence of TPNH but not DPNH, presumably by further hydroxylation. Caffeine seems to reduce the metabolism of added 3-hydroxyquinoline but not generated 3-hydroxyqninoline.

The conversion of benzene to phenol could be demonstrated, although no formation of a benzene dihydrodiol could be shown under similar conditions. Synthetic *trans*-benzene-1,2-dihydro-1,2-diol was not metabolized by the microsomes. The further metabolism of phenol can be decreased in the presence of versene.

No dihydrodiols could be detected after incubation of diphenyl, aniline, indole, or coumarin although these compounds could be hydroxylated to phenols by the microsomal system.

On the basis of these studies, it would appear that dihydrodiols are not intermediates in the formation of phenols by the microsomal system. It is proposed instead, that these compounds arise from a common intermediate, the nature of the products being dependent upon the tendency towards aromatization of an intermediate compound in which the aromatic nature has been temporarily altered.

The source of the oxygen incorporated during the hydroxylation of acetanilide to 4-hydroxyacetanilide was next investigated through the use of O_2^{18} and H_2O^{18}. It was found that only molecular oxygen was incorporated during hydroxylation, thus eliminating a mechanism proposing the addition of water across a double bond followed by dehydrogenation. An experiment using tritiated water, H^3_2O, confirmed this result, in that no tritium could be found in the isolated 4-hydroxyacetanilide. It also showed that the hydrogen of water is not incorporated into a stable ring position by another unsuspected mechanism.

A study was made concerning the requirement for reduced pyridine nucleotide for microsomal hydroxylation and for the hydroxylation of phenylalanine to tyrosine by a soluble enzyme. All animals tested used TPNH in preference to DPNH for the hydroxylation of acetanilide. Only rat, rabbit, and mouse could be shown to utilize DPNH in preference to TPNH for phenylalanine hydroxylase activity. In no case was TPNH found to be utilized in preference to DPNH for this latter reaction.

Tryptophan hydantoin, tryptamine, and acetyltryptophan could be hydroxylated presumably in the 7- position, although no evidence could be obtained for hydroxylation in the physiologically important 5- position. Tryptophan, possibly because of its highly polar nature which might prevent its entry into the microsomes, did not appear to be hydroxylated in the 5- or 7- positions. Hydroxylation of the parent compound, indole, occurred in the 3- position as evidenced by the formation of indigo blue in the incubation mixture. It was not hydroxylated in the 5- position. Hydroxylation of this compound in the 7- position was not investigated. The possible importance of the hydroxylation of indole to 3-hydroxyindole, in relation to the excretion of large amounts of indican, 3-hydroxyindole sulfate, daily in the urine, has been discussed.

All attempts at solubilization of the microsomes have failed, although it has been possible to fragment the microsomes into smaller particles by means of sonic disintegration. These fragments retain their activity.

The physiological importance of microsomal hydroxylation is not known, since it seems to act only on compounds which are foreign to the body. It is possible, however, that other, more water soluble compounds such as tryptophan, phenylalanine, kynurenine, anthranilic acid, and phenylacetic acid, might also be hydroxylated, given access to the enzymes. These compounds have previously been found not to be hydroxylated, presumably because of their lack of penetration into the microsomes. It has been proposed, that a reinvestigation of the possible hydroxylation of these compounds be carried out, using microsomes which have been fragmented by means of sonic disintegration. In view of the nonspecificity of the microsomes for hydroxylation, it is improbable that these compounds should not also be hydroxylated.

SUMMARIES OF DISSERTATIONS SUBMITTED FOR THE DEGREE OF DOCTOR OF JURIDICAL SCIENCE

LEGAL AND ETHICAL IMPLICATIONS OF MEDICAL RESEARCH ON HUMAN BEINGS

by IRVING LADIMER[*]

The field of medicine, which may be considered a group of related sciences and their application to health maintenance, prevention and treatment of disease, also comprises scientific research. In such research, it has often been considered appropriate and essential to experiment on human beings. Experimentation has proceeded along with medical practice to advance the health arts and sciences. The recent growth and involvement of large population groups, including children; the similar use of human subjects in other research areas; and the greater hazards attending new forms of medical investigation, underscore the need for defining the legal and ethical bounds within which human research may be conducted and establishing its relation to the customary practices of diagnosis, treatment, and medical care.

There is today greater realization of the implications of medical research. On the one hand, the atrocities committed by the Nazi doctors in the name of medical science are still a fresh memory; on the other, there is generous acceptance of clinical trials, field surveys, and experimentation on students, soldiers, and prisoners, among others, in appreciation of the dramatic health benefits resulting from proper and successful research. To the legal profession, the lawful conduct of such research, the avoidance of suit, and the management of potential litigation which may arise from experimentation are matters of both scholarly and practical significance. An analysis of the problems in modern medical study, yet to arise directly in a judicial forum, is offered in this review of pertinent legal, moral, and scientific research doctrine and guiding practice.

THE PRACTICE OF MEDICINE

What is the position of experimentation vis-a-vis medical practice? Regular practice is usually defined by statutes as diagnosis, treatment, operation, and prescription, generally based on the physician's offer to provide such service for compensation. Use of human beings for the advancement of science or preservation of health is not within this definition. In granting the license to practice medicine, the several states have not specifically included such research.

Cases interpreting statutes permitting the practice of medicine have generally attempted to suppress irregular practice and the intrusions of unlicensed healers. The responsibility of those licensed to treat a disease has been delineated in a line of British and American cases dating from the sixteenth century. These hold that a physician is bound to exercise the ordinary degree of skill, care, and judgment exercised by members of his profession in the same or similar locality in the light of the current state of medical knowledge. As a corollary, the physician, by virtue of the relation established with the patient, is liable for lack of skill or negligence or other conduct deviating from this standard.

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The law implies that the physician has the requisite skill and imposes the duty that he perform as well as he can, with the requirement that he keep abreast of advances in the field. In the absence of a contract, he does not guarantee a cure. The physician is furthermore not liable for an honest error in judgment or for employing an ineffectual treatment if selected from among those approved by the profession. In determining whether a physician has exercised his best judgment and applied skill, the testimony of experts establishes what is appropriate in similar cases and what is customarily done by members of the same school or specialty.

Liberal opinion permits his use of a method employed by a respectable minority, a technique proven elsewhere, a less dangerous treatment, or even an untried attempt to cure where there is no known remedy. The courts allow for the fact that medicine is not an exact science and also encourage progress in medicine within reasonable limits.

THE COURTS' VIEW OF EXPERIMENTATION

The breadth of the physician's practice, however, does not extend to experimentation. Malpractice cases have consistently held since *Slater* v. *Baker*,* the acknowledged English precedent, that experimentation is at the peril of the physician, no matter what his intention or reputation. Here, a famous surgeon attempted to straighten a leg by extension, using a novel device; expert testimony confirmed that compression was then the approved method. The leading American case,† decided about a century later, similarly condemned experimentation when a physician failed to instruct properly in the support of a broken arm. The court conceded that imposition of liability for use of a new method might deprive the patient of the benefit of recent improvements. Nonetheless, it ruled that before a treatment can be employed, it must have been authoritatively established, "otherwise experimentation will take the place of skill and the reckless experimentalist the place of the educated, experienced practitioner."

Neither of these cases involved experimentation in the sense of clinical research, planned and undertaken to explore a problem. Rather, they illustrate unskillful deviations from established practice or poor judgment, and they did not invoke experimentation as a basis for the action. Yet, the dicta of the courts became precedent reasoning for a series of subsequent cases similarly involving questionable diagnosis and treatment and outright quackery. In consequence, experimentation came to be regarded as and confused with irresponsible behavior, unskillful practice, and dereliction in exercise of judgment or care. The decisions fall short of any sophisticated appreciation of proper clinical investigation. Despite attempts to understand the need for a broad, flexible approach, the courts still consider experimentation, without further specification, as outlawed. The late Dr. Regan could thus aptly summarize the current situation, "Although it is the duty of the physician or surgeon to keep up with advancements, it is also his duty to refrain from experiments."

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* 2 Wils. [K.B.] 359, 95 Eng. Rep. 860 (1767).
† *Carpenter* v. *Blake*, 60 Barb. 488 (N.Y. 1871).

Strictly applied and uncritically followed, the early experimentation doctrine leaves no permissible avenue for genuine investigation. Analysis of the cases contributing to the continuance of this prohibition demonstrates that they have not encompassed bona fide experimentation, thus still leaving for determination the liability for research on human beings as now carried out by reputable physicians and scientists.

In the pseudo-experimental cases, there were at least three elements in common which are absent or hold different emphasis in modern research (1) the patient sought the physician for diagnosis or treatment of an illness and the physician assumed to cure the condition—he did not act as a scientist primarily for whom the patient served as a study case; (2) experimentation was considered a prohibited activity, so that the action or neglect complained of was justified not as possibly acceptable research but as a form of practice used elsewhere, a mode rarely but successfully employed, a technique similar to an approved method, or an appropriate alternative; and (3) the problems were not those requiring clinical study but, for the most part, were common questions confronting the regular practitioner and manageable within customary practice.

Definition and Guidance in Experimental Research

Since the reach of the courts thus far has not provided a grasp of medical research on people and would compress this activity into the frame of "experimentation", such scientific endeavor must be described and distinguished. Otherwise, legitimate research and quackery, justifiable nonconformance and negligent deviation may hang equally on the gibbet of malpractice.

Human research in medical science constitutes a controlled study or investigation by a professionally trained biological or medical scientist on or involving use of human beings, healthy or ill, primarily for the advancement of knowledge. If experimentation were so defined, the legal issue would then be not "experimentation" *versus* accepted practice, but an evaluation of the research plan and conduct in relation to specific fact situations, including the legal regard given to the subject or patient.

Attempts to delineate the difference between research and practice have emphasized the expectations of the researcher; his attitude and interest in a problem rather than the patient; the formality of relationship and understanding achieved; the flow of cash payment or other consideration; exchange of information between the parties; and, of course, the nature of the medical problem.

Applying the basis for the rules of malpractice which govern the regular physician, the methods and conditions followed by reputable researchers may serve as a guide to acceptable scientific procedure. Such a body of standards may be derived from the formal or informal codes set by the profession, actual practice followed by institutions and scientists in good standing, and applicable statutes and regulations.

There are several codes which are pertinent in this respect. First, the ethical principles of organized medicine apply in good measure; these are founded on the professional duty of the physician and his concern for the patient's welfare. Second, a generally accepted research code is the set of precepts drawn by the international court in the "medical case" of the Nuremberg Trials of War Criminals. This opinion outlined ten bases for permissible medical experiments essentially prescribing voluntary consent, the necessity for the research, design to limit hazard, adequate preparation and competence, and allowance for prior termination. Similar expressions have been issued by the American Medical Association and the World Medical Association. Other codes have been specifically designed to govern drug trials, studies of mental or psychological problems involving incompetent subjects, and use of military personnel. In addition, religious considerations have been introduced. Foremost are the extensive pronouncements of the Pope, defining the moral limits of scientific research on human beings within the greater community interest. Protestant views have also been offered among the criteria for patient concern in connection with specified medical procedures such as contraception, sterilization, euthanasia, and artificial insemination. The principles and codes spell out a wide area of agreement in both substance and method so that, for any legal process, a reasonable consensus is available.

Practices of medical research institutions, embodying directive principles for selection of projects and use of volunteers, generally incorporate a review system by committees of colleagues and experts. The essential of group consideration and approval is acknowledged by public and private research institutions, universities, pharmaceutical houses, and voluntary medical organizations. An outstanding example of careful preparatory design and obedience to local legal requirements as well as scientific adequacy may be found in the record of the National Foundation for Infantile Paralysis in its conduct of the national field trials of the Salk polio vaccine.

Statutes and regulations bearing on medical activity generally provide further aid. Although there is no statute directly controlling human experimentation, a bill introduced in 1900 for the District of Columbia attempted to regulate the means by which such study could be undertaken, the eligible subjects and scientists, and the requirements of reporting. In New York City, a current general order for city hospitals prescribes that research projects must be reviewed, approved, and deemed of some benefit to patients. International compacts under the United Nations also include pertinent protections of human rights.

The existence of standards or codes and continuing activity in this area evidence both concern and genuine interest looking toward the development of reasonable rules for performance of medical research on human beings.

LEGAL LIABILITY AND RESPONSIBILITY

Assuming that research is carried out in accordance with approved principles, there are still potential criminal, statute, tort, and contract liabilities. Possibilities for criminal liability are slight if the research is bona fide. Malice, essential to murder and mayhem, is not likely to be found. A genuine research project would hardly give evidence of deliberate purpose to injure without justification. Manslaughter, for which such malice is not an element, may, however, be upheld if the action constituted gross negligence or complete disregard of health and safety, where the consequences were or should have been known.

Malpractice cases have established that the standard of negligence for criminal liability is the same as that for civil liability, but the required degree is greater. In general, however, civil liability alone is imposed, except in extreme misconduct, indifference, or deliberate misrepresentation. Consent does not usually contribute a defense in a criminal case of physician malpractice and probably would not in a research situation.

Liability may arise under the new drug provisions of the Federal Food, Drug and Cosmetic Act which prescribes pre-tests as a condition for distribution of new drugs in interstate commerce. Methods for meeting the Act's requirements developed by the American Medical Association and other bodies suggest standards of proper practice which shoud be regarded as guides.

The drug house may be liable, without proof of negligence, for harm caused by use of drugs under investigation under doctrines of liability without fault. These base liability on the social insurance principle of placing cost where it can best be imposed in our society. The principle of assumption of risk, invoked in ordinary malpractice, is regarded by some as applicable to the research context but a definitive answer is yet to be given. It would depend on the degree of comprehension of an experiment, and the probability of extending the thesis of absolute liability as a social policy.

A basic principle of constitutional and natural law gives to the individual the right to protect his bodily integrity, so that any unauthorized invasion constitutes ground for civil liability. To be free from tort liability other than that arising out of negligence, the researcher who employs a person in his research must obtain valid consent. Malpractice cases are replete with illustrations of restraint on physicians where there is no clear, voluntary, competent assent. They have limited the extent to which physicians, especially surgeons, may presume on implied authorization. A line of liberal opinion recognizing the need for giving leeway to honest professional judgment has sanctioned operations and procedures deemed to be acceptable medical practice under circumstances akin to emergencies and apparent permission to proceed as indicated. But, consent, and even participation by the patient, has not been recognized as a bar to tort liability in nontherapeutic procedures, unnecessary procedures, or those involving criminal liability, such as unlawful abortions, or agreements against public policy. In particular, consent by or on behalf of minors or incompetents has not been proof against civil suit unless the action has been for the patient's benefit. Statutes reinforce this rule of case law.

Even if clinical research as part of medicine is entitled to the same favorable legal status in respect to liability for voluntary or negligent acts, that is, judged by the standard of comparable professional work, and is accorded a liberal interpretation of consent, it is evident that the nature of research would render the investigator more vulnerable. The courts' willingness to apply *volenti non fit injuria* in the physician-patient reference is founded on premises of accepted practice encompassing approved treatments, a reliance on understandings and relationships appropriate to a given locale, and the belief that medical procedures are undertaken primarily for the patient's welfare. These assumptions are less valid in investigator-subject contexts. Here, untried, not accepted, methods are used; a comprehension of action and purpose has not been developed; and, finally, the research objective is solution of a problem rather than aid to a patient. Accordingly, the courts may find it more difficult to make inferences of proper selection of a technique or to find consent. It is not unlikely, therefore, that a doctrine of liability without fault may be imposed as a cost of medical research, just as in workmen's compensation.

The physician, although generally held in tort, may also contract to treat or cure and will be held to contract terms like any other party. Some states permit malpractice action on the contract theory of an implied agreement. In such instances, negligence need not be alleged or proven.

The essence of any contract, however, including a research agreement, lies in complete understanding by both parties. Since, by its nature, research is a deviation from normal practice, it is evident that the researcher has a higher and more specific responsibility for full disclosure of purpose, method, and probable consequences. Achieving a meeting of the minds is far more critical. Moreover, there is a special duty to insure that the subject is competent to understand and agree.

Assuming complete comprehension and no unequal bargaining, it is submitted that a research contract involving scientifically and morally acceptable research can stand against trespass and liability for unauthorized contact. No more than any other waiver, however, can it serve as a release of claims based on negligence. This principle holds uniformly in malpractice cases.

Other incidents of the research relation raise questions of the availability of the confidential communication privilege, the application of *res ipsa loquitur* and *respondeat superior* rules, and special responsibilities in use of volunteers including prisoners.

The statutory privilege of confidence which may be invoked by a patient, silencing his physician respecting facts learned in treatment, would not seem applicable to the research subject, except where he is also primarily a patient. Sinse the purpose of the privilege is to encourage people to seek medical care by assurance that the physician will not testify, such purpose is less pertinent for the research relationship wherein the investigator seeks his subject and mainly studies a condition rather than a person.

Use of the evidence rules of *res ipsa loquitur* which has been recently applied to a greater extent against practicing physicians, replacing expert testimony regarding negligence and proper treatment, may be restrained for ordinary physicians but probably not for research. In this area, there are fewer established bases of proper action and no bodies of statistical and scientific data on the extent of risk. There is thus the special difficulty of distinguishing negligence from inherent risk where there is not ecognized practice.

Liability of hospitals or institutions for work done by researchers is also a major consideration. The trend toward holding hospitals responsible for rofessional contractor status for the physician has largely been discarded. Even where it still obtains to save the hospital from liability for profesional staff activity, such safeguard is less likely to affect researchers who re more apt to be considered employees in view of customary full-time stitutional associations. A similar reasoning would appear to apply to ability of federal institutions under the Federal Tort Claims Act. The atute governing the function of the agency, however, would be largely eterminative of whether the researcher is performing a discretionary or ndiscretionary act.

Use of volunteers, including prisoners, places a unique burden of care selection and responsibility for their employment on the research team. he factor of ability to serve in a research study must insure full legal mpetence on the part of a prospective subject and true freedom of decision. In this country and elsewhere, prisoners have long been and are now used for medical inquiry.

A program for considering prisoners for this purpose was presented to the American Medical Association disapproving participation by prisoners convicted of heinous crimes, disapproving excessive inducements, and outlining strict objective criteria for selection. It is submitted that such precepts should govern the selection not only of prisoners but all persons.

CONCLUDING OBSERVATION

Current concern and interest in conducting medical research is reflected in the legal and ethical questions raised by researchers and physicians and in developing suitable practical procedures necessitated for clinical study and new drug trials. There is a genuine desire to perform properly. It is suggested by this analysis, that the manner of omission or commission rather than use of specific action should govern human investigation.

From this foregoing critique, there may be derived a series of principles adaptable to new situations which would establish the responsibility of the investigator and sponsoring research organization. Professional self-discipline by adherence to such recommended legal-ethical standards should create a high level of scientific investigation and a preventive malpractice program for medical research.

MILITARY JURISDICTION OVER PERSONS NOT IN UNIFORM

by DAVID HOTTENSTEIN *

History and our own recollection assure us that since time immemorial there have been armies and wars.

Over all these years the military forces have been considered as an entity sufficiently separate from the civilian community as to warrant their subjection to codes of law peculiar to their martial status and activities.

Not for centuries at least, and probably never, have armies operated without a certain amount of direct assistnce from the civilian population, resulting in close association of certain persons, not actually in the service, with members of the fighting forces. In time of actual war, at least, this association was considered to be so intimately related to the military operations as to require the extension of the application of the military codes and Articles of War to this class of civilians.

The British and earlier military codes and Articles of War, provided that "suttlers and retainers to a camp, and all persons whatsoever serving with our armies in the field" were subject to the rules governing the soldiers whom they accompanied. This concept was adopted by our Continental Congress and became a part of our military code of 1775. Although the first American Articles of War of June 30, 1775, denounced the giving of assistance or information to the enemy as offenses triable and punishable by courts-martial, these provisions were not made applicable to civilians as were the British articles from which they were derived, but only to "Whosoever belonging to the Continental Army. . ." The limitation of the application of these early American articles to military personnel only, by the Second Continental Congress, is readily understandable. Generally speaking, treasonable conduct, at any rate before the Declaration of Independence, was considered an offense against the individual Colony rather than against the United Colonies. Also, among the wrongful acts attributed to George III, by the signers of the Declaration of Independence, were: "He has affected to render the military independent of, and superior to, the civil power." and "For depriving us, in many cases, of the benefits of trial by Jury." Naturally, therefore, the Continental Congress was reluctant, especially during the early days of the Revolution, to vest much authority in the military, particularly when the rights of civilians were involved.

Before the adoption of the Constitution, however, not only were suttlers, retainers to the camp, and persons serving with the armies in the field, subjected to court-martial jurisdiction, but also those civilians who gave aid or information to the enemy, and in addition, certain other civilians.

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Although the above clearly shows that the genesis of our military law considerably predates the Constitution, that instrument furnishes a new constitutional point of departure, and is generally referred to as the source of the military as well as the civil law of the United States. The framers of the Constitution, were quite aware of the fact that in order to have a central government capable of properly functioning, more powers should be delegated to the Congress than were granted to it by the Articles of Confederation. Article I, § 8, of the Constitution, as finally adopted, enumerates the powers considered essential to the legislative branch of the government. Among these is one which provides that the Congress shall have power "To make Rules for the Government and Regulation of the land and naval forces". This provision of the Constitution, together with that portion of the Fifth Amendment thereto which decrees that "No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury, *except in cases arising in the land or naval forces. . .*" have been storm-centers of legal controversies both within and without the military service. (Emphasis supplied.) Not only did our first Congress adopt those Articles of War which authorized the trial of civilians by military tribunals, but by later enactments expanded this jurisdiction.

Although no direct mention of military tribunals was made in the Constitution, the power of Congress to establish a military judicial system, separate and distinct from Article III courts, for the trial of persons *actually* in service was never seriously questioned, nor was any objection raised to the trial of such persons by courts-martial. Such trial of persons not in the service, especially since the adoption of the Constitution, has not been so readily accepted. It has been forcefully argued that an accused person, not actually in the service, is entitled to the right of indictment and trial by jury as provided by the Constitution and the Fifth and Sixth Amendments thereto.

During the Civil War, Congress enacted a law, which provided that quodam servicemen, who while in service committed acts of fraud against the United States, were amenable to trial by courts-martial for such offenses, to the same extent as if they had not received a discharge or been dismissed. With the exception of a wartime enactment in 1814, pertaining to militiamen, and the British court-martial case of Lord George Sackville in 1760, there was little precedent for such a grant of continuing jurisdiction to military tribunals. Although a wartime enactment, it became an integral part of an Article of War, and, with some slight modifications, so remained until 1951, when it was supplanted by a revised article of similar provisions. Until 1955, by the great weight of judicial authority this grant of continuing court-martial jurisdiction over ex-service persons was held to be constitutional. It was considered as coming squarely within the power of Congress to make rules for the government and regulation of the armed forces, and also as pertaining to cases arising in the land or naval forces.

During World War II, a number of serious crimes were committed abroad by American servicemen, including the murder of fellow American soldiers, which went wholly unpunished since the crimes were perpetrated beyond the jurisdiction of our civil courts and there were no provisions in the Articles of War giving jurisdiction of such crimes to military tribunals when undiscovered until the offenders had been separated from the service. In order to close this loophole, the Congress, in 1950, in the enactment of the Uniform Code of Military Justice, extended military jurisdiction over ex-servicemen to include all who had committed offenses while in service which were punishable by confinement of five years or more and for which the person could not be tried in civil courts. The constitutionality of these provisions of the code (Article 3(a)) were challenged in 1953, when ex-airmen Toth was apprehended in Pennsylvania by military authorities and returned to Korea to stand trial by court-martial on charges of the murder of a Korean national, committed while serving in Korea and approximately three months before his discharge from the Air Force in December 1952. The United States District Court for the District of Columbia held that the military had no statutory authority to return Toth to Korea. The United States Court of Appeals for the District of Columbia held not only that the Air Force had authority to return the accused for trial to the locus of the crime but also that the case arose in the armed forces and that the provisions of the code were constitutional. Eighteen months later the Supreme Court of the United States reversed the opinion of the United States Court of Appeals. It held that the Congress had no authority to subject "civilians like Toth" to trial by court-martial, and thus deprive them of their constitutional rights of indictment and trial by jury. This ruling of the Supreme Court reversed a long line of opinions by federal district and appellate courts and expunged from our statutes provisions which had been continuously therein for upward of ninety years.

It is believed that the opinion expressed by the three dissenting justices presented the sounder views. One of the most forthright provisions appearing in our Constitution is to be found in the Fifth Amendment, where it states that if a case arises in the land or naval forces, the accused is not entitled to indictment of a grand jury. By judicial construction this also excludes the right of trial by jury. In the *Toth* case the Supreme Court held that the phrase "merely makes clear that there need be no indictment for such military offenses as Congress can authorize military tribunals to try under its Article I power to make rules to govern the armed forces." An analysis of this construction makes it readily apparent that the rule is devoid of finality. Judicial determination in every case involving the phrase might well become necessary. And too, the rule thus laid down, cannot be reconciled with the one announced by the Supreme Court in the case of *Ex-parte Quirin,* in 1942, when it stated that one, who commits acts in violation of the law of war, may be tried by a military tribunal, irrespective of whether the case arose in the land or naval forces. A clear authoritative interpretation of the phrase would be invaluable to the lower federal courts and the military in determining the line of demarcation between their respective criminal jurisdictions. To posit that a case does not arise either when the offense is committed or when action is initiated with the purpose of bringing the accused to trial, would be doing violence to the phrase. It is submitted that when Toth committed an offense in Korea, while in actual service, and in violation of the Uniform Code of Military Justice, any prosecution thereof properly should be termed as a case arising in the armed services, as contemplated by the Fifth Amendment. It would appear inconceivable that the creators of the phrase intended that persons like Toth should be tried by Article III courts, when his two accomplices in the crime were tried and punished by courts-martial. Jurisdiction to punish rarely, if ever, rests upon such an illogical and fortuitous contingency as the mere happenstance that Toth was discharged from the service before his part in the crime was discovered.

It is further believed that the Constitution does not, without legislation and of its own force, carry such rights to persons like Toth. He is now inamenable to any trial for his part in the crime, notwithstanding the fact that it was the specific intent of Congress in drafting the Uniform Code that offenses such as these should no longer be committed with impunity.

An effort is now being made by the Congress to enact legislation whereby offenses, committed by persons while subject to military law and undetected until termination of such status, will come within the jurisdiction of the federal district courts. While there appears to be no alternative remedy for the unfortunate situation, it is believed that these courts will encounter many difficulties, that the delays will be oppressive and the costs exorbitant.

In 1949 the Supreme Court ruled in the case of *Hirshberg* v. *Cook,* that a person who reenlisted after being discharged from the service could not be tried by a military tribunal for an offense committed but undiscovered during the prior enlistment. This case was decided on the grounds that Congress never intended to grant the military jurisdiction in that type of case. The Uniform Code was made sufficiently broad to cover such cases, and since the accused was in service both when the crime was committed and when trial was initiated, though separated by a discharge-reenlistment hiatus, it is submitted that such a case under our present military law should be held constitutional, if on no other grounds, as a case arising in the land or naval forces.

It is indeed, difficult to see how the military trial of a case such as Toth's is less constitutionally compatible than are cases where draftees, not yet actually inducted into the service, and persons who commit offenses, though dishonorably discharged, while serving sentences adjudged by courts-martial, are tried by military courts. The latter two have been held by the Supreme Court to come within the jurisdiction of military courts.

Article 4 of the Uniform Code, substantially section 12 of the Act of March 3, 1865, granting any officer of the military service the right to test by a court-martial trial the justification for his dismissal by the President, has probably been rendered inoperative by the *Toth* opinion. Even though trial in such cases is brought at the request of the dismissed officer, jurisdiction cannot be conferred by consent, and it is doubtful whether the Supreme Court would accept the theory that the dismissed officer's request for trial would revive an obligation and re-establish a sufficient connection with the armed forces, as to bring him within the scope of the power of Congress to make rules therefor.

Court-martial jurisdiction over civilians serving with or accompanying the armed forces has a longer continuous history and a firmer background than does such jurisdiction over ex-servicemen for offenses committed while in service. Until 1916 the former jurisdiction was limited to "in time of war". Beginning with World War I and particularly during World War II, the "Korean War", and the present elongated "cold war", the number of civilians serving with and accompanying the military forces was appreciably increased. This was due in large measure to the technological aspects of modern warfare, requiring the services of a large number of trained civilian specialists and technicians whose skills are not available in sufficient numbers among members in actual service. Following World War II, and during the present period of instability in international relations, it became necessary not only to station abroad large military forces but also correspondingly large numbers of civilians to assist the military in its foreign assignments. For the sake of morale dependents of both military and civilian personnel have been permitted to accompany or join them overseas and beyond the jurisdiction of our civil courts. This situation has created disciplinary problems with which commanders overseas could not cope, unless these civilians are made subject to the jurisdiction of some American judicial system. In 1916, military courts were designated by the Congress as the logical forums and have so remained to the present time, with no limitation of jurisdiction as to periods such as, "in time of war".

Presently there are approximately one quarter million civilians, citizens of the United States, under military jurisdiction and the overwhelming majority of these are dependents of military and civilian persons stationed in foreign countries.

Shortly after the Toth opinion was announced in November 1955, a flood of actions were brought in the federal district courts, involving cases where civilians had been tried by military courts for offenses committed while accompanying the armed forces abroad. In view of the pronouncements in that case it was argued that the military was without authority to try such persons by courts-martial. After a series of conflicting opinions in the lower courts, the question was submitted to the Supreme Court of the United States for determination. In the cases of *Kinsella* v. *Krueger* and *Reid* v. *Covert,* decided by the Supreme Court in June 1956, it was held that Congress was within its constitutional powers in granting the military authority to try civilians accompanying the armed forces overseas.

In less than five months, however, after deciding these two cases, a petition for rehearing was granted, which resulted in reversal of the original opinions in less than twelve months from the date they had been rendered. Four Justices were of the opinion that "When the Government reaches out to punish a citizen who is abroad, the shield which the Bill of Rights and other parts of the Constitution provide to protect his life and liberty should not be stripped away. . . ." They were also of the view that the power of Congress under Article I, § 8, cl. 14, of the Constitution, "To make Rules for the Government and Regulation of the land and naval forces", taken in conjunction with the "Necessary and Proper Clause", does not extend to civilians, even though they may be dependents living with servicemen on a military post abroad.

Two of the eight Justices participating in the cases, would not go so far as did the four above, but concurred in the results only to such extent as they involved capital offenses committed in time of peace. The two dissenting Justices were of the view that the Court's original opinions were constitutionally sound, and that that portion of the Uniform Code enacted by Congress in 1950, under which the two dependents here involved were tried by court-martial for the murder of their military husbands while accompanying them abroad, was constitutionally compatible, necessary, and proper.

While the above indicates that less than a majority of the Court is willing to extend the rule enunciated by it beyond capital offenses, it is difficult to find any legal basis for contending that offenses less than capital could now, in view of the Court's holding, be tried by military tribunals. To say the least, the Supreme Court's alarming tendency to magnify the rights of criminals, has thrown a colossal problem into the lap of

Congress, and left this phase of military law in a state of utter confusion.

It is assumed that no one would contend that these wives of American servicemen should be permitted to murder their husbands, whom they accompanied overseas, with impunity. In addition to the impracticability of doing so, it is highly improbable that any foreign nation would agree to our establishing two judicial systems,—courts-martial and Article III courts—within its country. To many such "capitulations" would be tinged with colonialistic connotations. And also if these civilians are considered by our highest Court as not being so closely associated with our armed forces abroad as to warrant their subjection to military law, it is questionable that a foreign nation would agree to their being returned to the United States to be tried for offenses committed within its borders. Accordingly, in the absence of new treaties radically revising our present international arrangements, it is absolutely futile to talk of other alternatives.

The Court, in its second opinion, apparently envisioned the difficult problem it created for solution by the Congress, when it indicated that an amendment to the Constitution may be necessary in order to meet our military commitments abroad, or to exercise that degree of jurisdiction over our civilian citizens accompanying the armed forces, which foreign countries have been willing to relinquish to us. Such a "strangling literalness" in construing the Constitution, at a time when our very survival is in peril, would seem to be entirely at odds with the purpose and intent of that instrument, which is not an enumeration of "static rules but the living framework of government designed for an undefined future". Ample grounds for the trial of these civilians by courts-martial would seem to be embodied in such provisions of the Constitution as the treaty making power of the President; the powers of Congress to provide for the common defense, to make rules for the government and regulation of the land and naval forces, and to make all laws which shall be necessary and proper for carrying into execution its powers; and that phrase of the Fifth Amendment—"except in cases arising in the land or naval forces".

The ultimate effect of this sweeping pronouncement by the Supreme Court, might well be that the dependents and civilian employees will prefer to remain in the United States, if going abroad with the armed forces subjects them to foreign jurisdiction and requirements. On the other hand, the effect may be, due to security, disciplinary, and other reasons, that they cannot be permitted to accompany the military forces abroad. Patently, any such results would affect adversely the efficiency and morale of our forces stationed overseas, and seriously hinder our maintaining a professional corps of officers and men. Many would be unwilling to spend one-third their service separated from their families.

Coming within the orbit of military jurisdiction is still another class of civilians who, though not otherwise subject thereto, is considered as coming within its scope purely as a result of the type of offense committed. Those civilians who give aid to the enemy, act as spies, or disturb the proceedings of military tribunals by disorderly conduct or menacing words are by custom and law made amenable to trial and punishment by military courts.

The first two of these offenses have always been regarded as acts in violation of the law of war. Neither Article III, § 2, of the Constitution nor the Fifth and Sixth Amendments indicate that one guilty of such violation is constitutionally entitled to indictment and trial by jury except when the offense amounts to actual treason. It has been held that it was never the intent of the framers of the Constitution to extend the right of trial by jury beyond that practiced at common law, unless so provided. Such offenders, therefore, whether citizens or aliens, would fall without the constitutional guaranties by committing offenses which have always been considered as triable by military tribunals. Military jurisdiction in such cases may attach even though the case does not arise in the "land or naval forces". On the grounds of necessity, military tribunals should be given jurisdiction of wide scope in dealing with offenses of this type, which arise only during periods of war.

Only courts of record have the general power to punish for contempt. Since long before the adoption of the Constitution, however, courts-martial have been empowered to exercise this authority. In such cases the military courts generally find it less embarrassing by merely causing the civilian offender to be removed as a disorderly person, and in aggravated cases by procuring a complaint against him in a civil court. In view of the seriousness of some of the cases adjudicated by military courts, it is believed that they should have the power to punish for contempt although the exercise thereof as pertains to civilian offenders should be held to a minimum.

The opinions, including those of the Supreme Court of the United States, relative to the question of subjecting civilians to military law, have been various—oscillating all the way from very strict pronouncements as in *Ex parte Milligan* (1866), *Hirshberg* v. *Cooke* (1949), *Toth* v. *Quarles* (1955) and *Reid* v. *Covert* (1957), to more liberal rules as in *Kahn* v. *Anderson* (1921), *Ex parte Quirin* (1942), *Billings* v. *Truesdell* (1944) and *Madsen* v. *Kinsella* (1952). The trend of the Supreme Court's opinions, however, in the last decade, has been toward unprecedented strictness.

It is believed that military jurisdiction over civilians should be limited to that which is necessary and proper as contemplated by the Constitution. These factors are not constant and were never intended to be. A change in our municipal law, international law, or treaty agreements may affect them. Since, however, military tribunals have only such power to punish as is granted to them by legislative enactments, and with a Congress imbued in the principle that the military is subordinate to the civil, it is believed that no real apprehension need be entertained that this jurisdiction will ever be dangerously extended, and that if, on another day, conditions permit, military authority over civilians will be restricted accordingly.

SUMMARIES OF DISSERTATIONS SUBMITTED FOR THE DEGREE OF DOCTOR OF EDUCATION

A STUDY AND ANALYSIS OF PROBLEMS OF NAVY OFFICER CANDIDATES

by JENNINGS F. BALLARD*

THE PROBLEM

The purpose of this study is (1) to determine the identity and frequency of problems encountered by Navy officer candidates who are undergoing training to become commissioned officers in the United States Navy; (2) to determine the intensity and persistence of these problems during the training period; (3) to analyze the problems identified including a study of their relationship to other known factors, i.e., admission standards, age, college major, and marital status; and (4) to make recommendations concerning any improvements which could be made in specific aspects of the Officer Candidate Program as indicated by the study. An officer *candidate* is an individual who is enrolled as a student at the United States Naval School, Officer Candidate, Newport, Rhode Island, where he is undergoing a program of orientation and instruction prior to becoming a commissioned officer in the United States Navy. A *problem,* for the purposes of this study, is defined as a difficulty, recognized by the officer candidate, which seems to him to interfere with his best performance and achievement in the school program. The study focuses attention upon problems as seen from the point of view of the officer candidate. The need for the study grows out of the nature, scope, and importance of the Officer Candidate Program, and the fact that no study of this kind has been made previously.

THE PROCEDURE

After a review of the literature was made, a study of the Navy's United States Naval School, Officer Candidate, and the officer candidates enrolled there was conducted in order to gain some understanding of the officer candidates and the setting in which they lived and studied. In order to determine the problems of officer candidates, six basic approaches were used. These were as follows: (1) development and administration of an officer candidate form; (2) development and administration of a staff form; (3) a visit to the school; (4) discussions with key staff members at the school; (5) interviews with officer candidates and former officer candidates, including some who were commissioned and some who were disenrolled; and (6) a special questionnaire item. The results were obtained by use of the approaches mentioned above and were examined in detail. Major categories were established by organizing the material under problem areas. Problem categories were selected in terms of what seemed logical and in terms of useful divisions for possible users of the results who are especially interested in specific areas such as academic problems or military adjustment problems. Specific items were then formulated under each category.

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* A.B. 1942, East Carolina Teachers College; A.M. 1947, Columbia University; Ed.D. conferred June 4, 1958. Professor in charge of research: Mitchell Dreese, *Professor of Educational Psychology*.

After appropriate discussions with University advisers and Officer Candidate School officials, it was decided to develop and administer a questionnaire to an entire class of officer candidates. Approximately half of the class (408 students) completed the questionnaire in the first half of the training period and the remainder (302 students) completed the questionnaire in the last half of the training period. The questionnaire was designed to yield useful data concerning the frequency, extent, and persistence of identified problems. In order to conserve the time of officer candidates, the instrument had to be concise yet complete and not too time consuming when administered. Problem items were put in interrogative form. Officer candidates were requested to check the appropriate column, for each item, on a four-point scale. The categories indicated intensity or how much of a problem the particular item was on the following scale: "Very Much", "Some", "Very Little", or "None". Space for comments was also provided. Trial administration of the questionnaire was conducted by the writer and a commissioned officer at the school using one section of officer candidates. The officer candidates provided oral and written comments as to the form and content of the questionnaire, as well as the method of administration. After appropriate revisions, which were fairly minor, the final form of the questionnaire was prepared. Trial administration of the questionnaire and discussions with school officials established the need for a separate answer sheet. Such a sheet was designed and provided for responses as well as certain related information about the individual officer candidates. This information included (1) class number, (2) date questionnaire was completed, (3) age of the officer candidate, (4) college major, (5) marital status, and (6) Officer Qualification Test (OQT) Score. All responses were unsigned.

Administration of the questionnaire was conducted in small groups of approximately thirty individuals in regular classrooms. An officer was present in each group. Prior to the administration, the writer and the Scheduling Officer met with proctors to explain the purpose of the questionnaire, distribute materials and instructions, and to discuss any questions or problems.

Tabulation of the responses to the questionnaire was a task of considerable magnitude involving some 85,200 responses. Nevertheless, the data were tabulated and analyzed to show frequency of problems, intensity measures, persistence, and other information in appropriate tables which were explained in detail. Further analyses included correlation studies and other appropriate statistical analyses.

FINDINGS

The problems identified were grouped into major categories of kinds, or types of problems. The most significant problems for the major categories included problems such as the following:

Becoming an Officer Candidate

Obtaining information concerning typical billets to which junior officers are usually assigned
Obtaining accurate information concerning Navy commissioned officer designators

Academic Problems

Covering assignments at Officer Candidate School, including reading assignments
Separating major and minor points to be learned in courses at Officer Candidate School
Insufficient study time
Need for more ship visits and practical work
The relative emphasis upon "memory" work versus thinking and understanding
Difficulty in remembering the amount of material required
Need for more emphasis upon principles versus detailed facts to be learned

Navy Classification and Occupational Information

Obtaining sufficient occupational information concerning Navy jobs, tour of duty, pay, and career information
The limited amount of time available for interviews concerning next duty assignment

Pace of the Program

The "pressure" at Officer Candidate School

Physical Facilities and Location of the School

Difficulty because of stores and other facilities being closed when one has time off

Personal Adjustment Problems

Fear of failure to pass the course and get a commission
Developing self-confidence in one's ability to do the work at Officer Candidate School

Adjusting to so many activities in the early weeks at Officer Candidate School

Experiencing failure for the first time and then, without "panic", improving one's work so as to achieve a satisfactory average

Insufficient finances during early weeks at Officer Candidate School

Social Adjustment Problems

Difficulty in obtaining information concerning social customs in the Navy

Routine: Adjustment to Officer Candidate School

Unscheduled activities taking the place of scheduled study periods

Military Life: Adjustment to

Obtaining information needed before purchasing uniforms

Difficulty in rating close associates, i.e., making "buddy ratings"

The need for more practical experience for officer candidates who are inexperienced in leadership and other duties of an officer

Motivation

Need for more time and effort at Officer Candidate School to develop interest in and love for the Navy and better understanding of its mission

Recreation

Insufficient sports activities and other physical exercise

Food

The amount of time spent in "chow" line

Health Problems

Insufficient sleep and rest

As for the frequency of the problems of officer candidates, over 50 per cent of Class 34 indicated that 100 of the 120 items on the questionnaire were problems for them. Approximately 80 per cent of the entire class indicated that the 30 items listed above were problems for them. Thus, it can be seen that the problems identified were problems of high frequency.

Results of the analysis of the data concerning the intensity and the persistence* of the problems of officer candidates can be presented by these summarizing statements:

1. The officer candidates had a considerable number of intense problems.

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* Officer candidate perception of intensity of problems at two time intervals is the basis for the evidence of persistence of intensity.

This statement is supported by the results of the computation of point values for the various problem items as well as by the tabulation of the items checked as "Very Much" a problem. For example, every one of the 120 items on the questionnaire was "Very Much" a problem for some of the officer candidates at some point in their training. Even more significant is the fact that 27 items were scored "Very Much" problems by more than 20 per cent of the officer candidates.

2. As measured by average intensity scores, about two-thirds of the 120 items in the questionnaire were not intense problems for Class 34 as a whole.

   This statement is supported by the fact that *average intensity values* for 82 of the 120 items were in the "Very Little" category, or lower, for both administrations of the questionnaire.

3. The intensity of the problems, including the higher ranking problems, remained fairly constant from the first half of the school program to the end of the training period.

   This statement is supported by the evidence that in the comparisons of intensity point values, 103 of the 120 items did not change enough in intensity, in either a positive or negative direction, to move from one of the four major categories to another category when the scores for the first half and the scores for the second half of the school terms were compared. Also, there is supporting evidence from the high intensity or "Very Much" scores. Of the 27 items checked by more than 20 per cent of the officer candidates, 13 of the items appear with these high scores in *both* halves of the school program.

4. Although not a large percentage of the problems changed intensity categories, of the items which did change, Academic Problems showed more improvement than any other major type of problem.

   In support of this statement, it should be noted that 6 of the 7 items moving to a lower intensity category on the point value scale were Academic Problems.

5. The frequencies with which problems of officer candidates occur change very little during the training period. In fact, some problems were mentioned more frequently at the end of the course than at the beginning.

   This statement is supported by the evidence that of the 120 items, 96 items were indicated by 50 per cent or more of the officer candidates as problems for them at the time of the first administration of the questionnaire. At the time of the second administration of the questionnaire, 50 per cent or more of the officer candidates indicated that 102 of the 120 items were problems for them. Also as evidence is the fact that of the 120 items, 46 decreased in frequency and 74 increased in frequency from the first to the second administration of the questionnaire.

STATISTICAL ANALYSES

By use of statistical analyses, the relationship between the problems of officer candidates and other factors was studied with the results as indicated below:

1. Problem scores and Officer Qualification Test scores, when examined by the correlation technique, are shown to have no significant relationship.
2. College major fields and problem scores of officer candidates may be assumed independent.
3. Officer candidate problem scores tend to be significantly related to chronological age.
4. Officer candidate problem scores and marital status tend to be independent.

There was some indication that disenrollees tend to have more problems than graduates. The number of disenrollees for whom data is available, however, is not considered sufficient to establish a definite conclusion.

The data presented in connection with the statistical analyses cover only certain major aspects of officer candidate problems and their relationship to other factors concerning the candidates. Future studies will reveal additional information.

RECOMMENDATIONS

The findings of the study indicate that officer candidates have certain problems and that these problems influence various aspects of the officer candidate training program. These findings provide needed information from the officer candidate's point of view. Certain recommendations for constructive corrective action flow logically from the findings of the study. It is realized, however, that those who must make the determination as to what administrative action will be taken must consider other factors and points of view, as well as these findings. The proposals made here are those that would help officer candidates solve their problems, as they see them, and thereby improve the efficiency of the Officer Candidate School.

More adequate occupational information concerning the Navy should be available for college students and recent college graduates. This is considered a joint responsibility of the colleges and universities and the Navy. Examples of the kinds of information which would be especially helpful to prospective officer candidates include the following: (1) information concerning typical billets and tours of duty to which junior officers are usually assigned, (2) the meaning of Navy commissioned officer designators, and (3) information concerning pay and other related factors.

Prospective officer candidates, especially those who are considering making an application for officer candidate status, should have access to more complete information concerning the United States Naval School, Officer Candidate, its standards, program, and requirements.

The Navy should continue to accept officer candidates in the older age groups of those currently eligible (19–27). In view of the better problem scores of the more mature groups, consideration should be given to increasing the quotas for the older individuals and to raising the age limit.

The instructions which are given to officer candidates prior to their arrival at Newport should be modified to provide for a small increase in the amount of money which it is suggested that individuals bring with them to cover items of personal expense during the early weeks of training.

The length of the Officer Candidate School course should be increased. An increase in the length of the officer candidate training program would have some major advantages, including the following: (1) provide more time for better learning of the material now included; (2) provide more time for practical work including shipboard training; (3) provide time for more training and practice in leadership; and (4) provide more time for physical exercise, rest, and recreation.

The Officer Candidate School should review its schedule of activities and establish a firmer schedule of study periods, if possible.

The Officer Candidate School should compare the schedule of "free" periods for officer candidates with the hours of operation of facilities where officer candidates make purchases to see if any improvement can be made.

A study of the *Curriculum for United States Naval School, Officer Candidate,* and the teaching methods employed at Officer Candidate School, should be made to determine whether there are subjects which need more emphasis upon principles versus detailed facts to be learned.

The Navy should maintain a continuing review of the material presented to officer candidates concerning the Navy's mission as well as a continuing evaluation of the effectiveness of such material in motivating prospective junior officers.

Instructors, Company Commanders, and others should become more cognizant of the fears of officer candidates and attempt to alleviate such fears, making appropriate use of available referral services for guidance and counseling.

More time should be scheduled at Officer Candidate School for individual interviews, and small group discussions concerning Navy information of immediate concern to the officer candidates such as types of shipboard duty available, next duty assignment, social customs, etc.

The food service provided for officer candidates should be examined to see whether improvements can be made.

Officer Candidate School should review the information provided to officer candidates prior to their purchasing uniforms to determine whether the information can be improved.

FURTHER STUDIES

It is suggested that further study develop an instrument, consisting perhaps of one-third to one-half of the more serious problems identified in this study, for use as a screening device in Officer Candidate School to call attention to problems which call for individual guidance and counseling.

Similar studies could be conducted profitably at the Naval Academy, in the Naval Reserve Officer Training Corps program, and in similar programs of the Army, Air Force, and the Marine Corps to identify and to analyze the student problems in these programs.

An item analysis of the responses to the 120 problem items of officer candidates would be likely to reveal much worthwhile information. In view of the number of items and the responses, however, it would not be practicable to conduct such an analysis without the facilities of machine processing equipment and punch cards or similar facilities.

A study should be made of Navy referral resources, their utilization, and their relationship to problems of officer candidates. Most large naval stations have excellent referral facilities available for individual counseling and guidance. It would be helpful to know to what extent these facilities are utilized and how much they alleviate the problems of officer candidates.

A comprehensive study of disenrollees should be made to identify more conclusively the problems of this group of officer candidates and to analyze the nature of such problems.

A follow-up study of successful graduates should be made to determine whether or not there is a relationship between officer candidate problems and junior officer performance.

An investigation should be made to determine whether group solutions of common problems might give officer candidates practice in problem solving and at the same time alleviate or solve some of the actual problems identified in this study. Such activities may prove to be valuable background experience when these individuals become junior officers.

At the end of a designated period of time a study should be made of the problems which junior officers remember as important ones in their officer candidate training. For example, at the end of two years of commissioned service, junior officers could be requested to record their most difficult problems in Officer Candidate School and to suggest appropriate measures for improvements.

A study of the performance of former officer candidates during their first six months of active duty as commissioned officers, and the problems encountered, would also be of great value in making officer candidate training as effective as possible in preparing the individual for commissioned service aboard ships at sea.

AN EVALUATION OF SUPERVISION IN THE COOPERATIVE EXTENSION SERVICE

by MARY L. COLLINGS*

The Cooperative Extension Service is an educational agency employing about 14,000 trained, salaried workers who give out-of-school educational aid on real-life situations to people of the United States. The agency largely serves rural people. The county-level professional workers are supervised by about 700 state extension supervisors. This study is focused on the work of the state supervisors.

Purpose and Scope

This dissertation attempts to determine the extent to which extension supervision measures up to standards. More particularly, it is concerned with these questions:

1. What are acceptable criteria for supervision in the Cooperative Extension Service?
2. To what extent does supervisory practice meet these criteria?
3. How can supervisory practice be improved?

Procedure and Data

Criteria were identified by a review of literature from the fields of education, business, industry, government, and volunteer agencies. Nine criteria were chosen for validation. Much of the basic data needed to answer the questions in this dissertation were gathered by questionnaires. A panel of experts validated criteria by accepting or rejecting the 9 proposed criteria submitted and by indicating the relative importance of 48 activities and 38 key practices associated with the criteria. A 33⅓ per cent sample of first line extension supervisors filled out the pertinent information relative to their supervisory workload, work activities with the kind of responsibility taken for each activity, the practices performed, and the in-service training opportunities they had had since becoming supervisors.

Recommendations for improvement were devised through discussions with Federal Extension Service staff members who were members of the validating panel and who reviewed the study data with the writer.

The basic design of the study was devised by the writer under the general direction of Meredith C. Wilson, Director of the Division of Extension Research and Training, formerly Adjunct Professor of Education, and James Harold Fox, Professor of Education, both at The George Washington University.

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CRITERIA FOR EXTENSION SUPERVISORS

The criteria accepted by the panel of experts participating in the study were:

1. Supervision is a purposeful activity; it proceeds by getting a clear conception of purpose and develops principles to guide in attaining purpose.
2. Supervision organizes human activity efficiently; it guides agents to get the job done, to carry out the purposes of the agency.
3. Supervision is based upon the analysis of the needs of each individual agent—both personal needs and those related to performance as an extension worker.
4. Supervision is a cooperative activity; it takes place through the shared ideas and experiences of all staff members.
5. Supervision is an educational process; it assumes responsibility to develop the competencies of the staff and to motivate professional improvement.
6. Supervision studies the extension job and makes each activity of the job become practice in problem solving for the staff members involved.
7. Supervision uses evaluation to improve every major activity of the county extension program.
8. Supervision evaluates its own effectiveness.
9. Supervision demonstrates a desire to be of assistance to the worker personally and professionally.

ACTIVITIES AND PRACTICES

Once criteria were formulated, the next problem in this study was to relate criteria for extension supervision to activities and practices which would give them meaning and interpret them in everyday action. After some experimentation, lists of 48 activities and 38 key practices were developed. For validation purposes, each list was formed into a check sheet having 3 possible choices the respondent might select to indicate the degree of importance he attached to each activity or practice. The activity list provided space for the respondent to indicate, if he thought the activity important, what kind of responsibility the supervisor should take for it. The "kind of responsibility" decision gave the respondent a choice of 4 degrees of involvement with the activity. The length of the lists of items was governed by the nature of the criterion and practical considerations. The validating panel accepted 40 of the 48 activities and 31 of the 38 practices as very important to the supervisory job.

APPRAISAL OF CURRENT SUPERVISORY PRACTICES IN LIGHT OF CRITERIA

Data concerning current supervisory practices in 44 states were obtained from first line supervisors by means of questionnaires. To provide data, one third of the total supervisory force was chosen by random sampling methods. Ninety-seven per cent of those in the sample completed and returned the questionnaires. Forms asked for 132 separate answer items and were divided into three general sections entitled: "Supervisory Workload and Problems", "Supervisory Activities", and "Supervisory Practices".

Extension supervisors generally agreed with the panel of experts concerning the relative importance of activities and practices and accepted the criteria. As might be expected, however, supervisory performance fell short of the desired standard. The majority of the agricultural supervisors performed 37 of the 40 selected activities but took the appropriate kind of responsibility for only 20 of them. The activities performed by the majority were related to 8 of the 9 criteria. Agricultural supervisors rarely averaged more than eight hours time on any activity per time performed. It is doubtful that some of the more significant and involved activities could have been adequately done in twice the time allowed.

The record for home demonstration supervisors is quite similar to that of agricultural supervisors. The majority of the former performed 38 of the 40 activities and took the appropriate kind of responsibility for 21 of them. The time spent on important activities was no more adequate than that reported by agricultural supervisors.

The majority of 4-H supervisors performed only 21 of the 40 activities but took the appropriate kind of responsibility for 20 of those performed. In spite of fewer activities performed, the amount of time spent by 4-H supervisors on important activities is no more adequate, except in one or two items, than is that of other supervisors.

A majority of agricultural supervisors performed to some extent 17 of the 31 practices but thought they performed only 8 practices adequately. A majority of the home demonstration supervisors used 20 of the 31 practices but thought they performed only 6 practices adequately. A majority of the 4-H supervisors used 18 practices to some extent but thought they performed only one practice adequately, i.e. taking an interest in each agent as an individual. This extremely harsh appraisal of their own adequacy may be a case of general self-depreciation. On the contrary, however, it may indicate a general feeling that the extension supervisory job is too big and involved for the majority of people to be satisfied with their mastery of it.

Activities and practices least often used by agricultural and home demonstration supervisors were largely those associated with criteria VII and VIII, namely evaluation of the county program and evaluation of supervisory performance. The majority of 4-H supervisors performed activities and practices associated pretty largely with 6 of the 9 criteria.

Time data and the supervisors' own judgment of adequacy of performance indicate that a truly quality job could not have been completed in most cases. Time involved was particularly short for activities related to planning and evaluation. One is forced to conclude that all three groups of supervisors, though doing some work on most of the more important activities and practices, are spreading their time very thin and failing to concentrate on the most important phases long enough to do a thorough job.

Data reported by supervisors indicate various means currently being used by extension administrators to improve the quality of supervision. These range all the way from conferences and summer courses to reading, visits to other states, and use of rating sheets. It is obvious that most of the training opportunities reported do not command sufficient attention in the states generally.

RECOMMENDATIONS FOR IMPROVEMENT

The data presented in this study suggest a number of steps which might be taken to improve extension supervision as it has been revealed here. The basic criteria and degree of involvement (kind of responsibility) concepts used in this study offer a new and different way of thinking about the extension supervisory function. If the supervisor can get a clear conception of the accepted criteria and the appropriate degree of involvement for each aspect of his job, he should be more able to apply his time effectively. Therefore, the first and foremost application of the results of the study should be for extension supervisors and extension administrators to study the criteria and degree of involvement concepts which have been proposed.

The various suggestions which follow are more detailed recommendations concerning how the Extension Service in any given state might undertake to improve its supervisory service.

1. The first step might well be the preparation of a detailed job description for each supervisor. The supervisor or the administrative staff in any given state could prepare such a statement; however, better results would accrue, no doubt, if administrators and supervisors worked together to prepare job descriptions. Then greater understanding would be gained each of the other's expectations for the role of supervisor and the criteria for effective performance. Job descriptions are being pre-

pared now in many states but the concepts embodied in these criteria and degrees of involvement are not being considered in the preparation.

2. The preparation of job descriptions for supervisors alone will not suffice. Functions of other staff members must be described and how they are related to those of the supervisor in terms of the degree of involvement with the same activities. This process should clarify the shared relationships which are creating some confusion among supervisors.

3. Serious consideration needs to be given to the ratio of agents to supervisors. The ratio is not particularly high for educational supervision but distances between supervisors and supervised agents makes the ratio more critical. If it is not feasible to increase the number of supervisors in a state because of budget limitations, then a realignment of responsibility for some functions currently carried by supervisors should be made. Two fairly obvious changes might be:

a. Recruitment, selection, and employment functions could be centralized for the state and handled by a personnel officer. This is currently being done in some states. The change is too recent for results to be apparent.

b. Induction training could be made a function of the senior experienced agent (county director) in the county. This is being tried in California with good results.

4. Based on this study, and other similar studies, an induction training program for extension supervisors should be devised. No such program has been outlined. Yet, all states have induction training of a sort. To date supervisors have been learning by the trial and error method with such individual attention as very busy administrators and state leaders or other supervisors can undertake. To this writer's knowledge, there has been no written plan for such training. One summer school course for supervisors is currently held in rotation at the regional extension summer schools. This is the tenth year it has been offered. A graduate course on supervision was given in 1956 at the National Agricultural Extension Center for Advanced Study in Administration and Supervision, University of Wisconsin.

At four or five year intervals since 1946, regional workshops for extension supervisors have been held. These week-long sessions, though they have reached almost every supervisor, have been too short to develop much genuine skill in supervisory practice. Positive administrative action should be taken to devise a national approach to induction training for supervisors that would be more effective.

5. Extension supervisors should be encouraged to undertake self-evaluation. This study indicates that extension supervisors are particu-

larly weak in evaluation, both of the county programs and their own supervisory performance. In order to learn the techniques of evaluation, supervisors might well experiment on self-evaluation checklists and other simple devices until they gain confidence to attempt an evaluation of some phase of the county extension program. A checklist which might be used by supervisors has been developed by the writer as a part of this study.

AN EVALUATION OF GUIDANCE SERVICES IN THE SENIOR HIGH SCHOOLS OF BALTIMORE COUNTY, MARYLAND

by ANNA R. MEEKS*

Continuous evaluation of school programs is recognized as highly desirable, and there is an obvious need for evaluation when a program is expanding rapidly. If growth is to be more than a mere accretion of personnel and services, a program of continuing evaluation must reveal strengths and weaknesses. Improvement in the quality of services demands careful planning based upon a knowledge of the degree to which present policies and practices are contributing to the realization of educational goals.

THE PROBLEM

This study has the dual purpose of providing an appraisal of the county program of guidance services to serve as a basis for future growth and expansion, and of providing an opportunity to consider the problem of validation when self-appraisal techniques are employed. The evaluation provides data relative to these aspects of an organized guidance program: (1) the general nature and organization of the guidance program, (2) the extent and character of the guidance staff, and (3) an inventory of the guidance services.

Data obtained in a second investigation are used to validate broad assumptions concerning the adequacy and effectiveness of guidance policies and practices.

The study provides statements of (1) the best elements of the county and local school programs of guidance services, (2) the least adequate aspects of these programs, and (3) recommendations for changes in policies and practices.

REVIEW OF THE LITERATURE

The literature was reviewed for studies which provide critical analyses of evaluative procedures which have been reported and constructive suggestions for the improvement of evaluative studies. A limited number of studies are discussed. Studies chosen for discussion illustrate attempts to implement improved techniques of evaluation or are devoted to evaluations of total programs of guidance services.

The studies which are reviewed include (1) systematic and long-range program evaluations, (2) development of criteria and instruments of evaluation, (3) normative surveys, (4) follow-up studies, and (5) opinion studies.

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* A.B. 1926, Goucher College; Ed.M. 1947, University of Maryland; Ed.D. conferred June 4, 1958. Professor in charge of research: Mitchell Dreese, *Professor of Educational Psychology.*

The few program studies available relate the specific goals of the program to the total education program and validate the effectiveness of the services as well as the extent of practices and procedures.

CRITERIA

Section G "Guidance Services" of the *Evaluative Criteria of the Cooperative Study of Secondary School Standards,* 1950 Edition, provides the criteria for the self-appraisal of the guidance services in the local schools.

Criteria for the evaluation of the counselor as a staff member are provided in Section J of the Evaluative Criteria.

Criteria developed for the purpose of validating the self-appraisal obtained in the schools by using Sections G and J of the Evaluative Criteria involve the following considerations.

1. Teacher, counselor, and administrator understand the basic principles of child development.
2. Teacher, counselor, and administrator present attitudes consistent with the basic principles of a democratic organization in which the individual is valued for himself alone.
3. The members of the school staff give evidence of good mental hygiene.
4. The activities of the counselor represent a balance of administrative and routine tasks with sufficient time for counseling, conferences, and other work related to the counseling function.
5. Administrative practices are consistent with the best practices over the nation.
6. Curricular offerings are designed to provide experiences related to guidance objectives.
7. The graduates show a concern for problems related to the developmental tasks of adolescence giving evidence of desirable maturity.

PROCEDURES

The procedures used in the collection and interpretation of data included the following.

1. The compilation of data gathered from the schools using (1) Section B "Pupil Population and School Community," (2) Section C "Needs of Youth," (3) Section G "Guidance Services," (4) Section J "Data for Individual Staff Members" of the *Evaluative Criteria of the Cooperative Study of Secondary School Standards,* 1950 Edition.
2. Visits to every school by the County Supervisor of Guidance.
3. The administration of Remmers and Stedman Inventory, *Bringing Up Children* and *An Experimental Scale on Attitudes* by Cottle and

Lewis to administrators, counselors, and sample groups of teachers in each school.

4. Analyses of counselor reports of activities covering a six-month period.

5. A survey of administrative practices and policies in state, city, and county departments of education.

6. The administration of the *McCleery Scale of Adolescent Development* to an average section of seniors in each school with control groups in two of the high schools.

7. An analysis of curriculum offerings to discover types of experiences which can be considered significant in achieving the guidance objectives.

FINDINGS

A summary of Pupil Population data derived from Section B of the Evaluative Criteria shows the necessity of evaluating each local school program in terms of its own needs and readiness for guidance services and the need for greatly diversified in-service training programs. These data and supplementary studies provided by the Baltimore County Board of Education provide evidence of (1) financial ability to provide adequate services, (2) the extent to which each school is meeting the educational and vocational needs of the pupils, and (3) unmet needs peculiar to local school communities.

Summaries of data obtained by use of Section G "Guidance Services" of the Evaluative Criteria provide for a discussion of strengths and weaknesses in local school programs, and suggest areas which need to be improved through county policies, increased financial assistance, or county-wide programs of in-service training.

The study reveals evidences of strengths in the basic philosophy and in the organization for guidance, fairly extensive participation by teachers in guidance functions, well-trained professional counselors, fairly adequate supporting programs of services, extensive and fairly adequate records of educational achievement, good educational information and educational placement services. Weaknesses center in adequacy of assigned counseling time, teacher understanding of guidance procedures, pupil records, placement, and follow-up procedures. Of special concern is the inability to attain the goal of increased counselee self-direction.

A summary of data from Section J of the Evaluative Criteria gives evidence of a staff which is professionally strong. Such evidence included (1) personnel which is fully certified under the standards of the Maryland State Department of Education; (2) all but one of the twenty counselors holding degrees on the Master's or Doctoral levels; (3) an average of 20.25 hours of work in specific guidance courses, and 21.5 hours in graduate education and psychology courses; and (4) personnel holding membership in and actively participating in professional organizations.

The attempt to validate the judgments of school staff evaluations gives some evidence of the degree to which the evaluations are sound. The studies point up some areas which need further research. The following statements summarize the relationship of the studies to certain aspects of the self-evaluation.

1. The criteria used for the self-evaluation were designed for use in a school and do not provide opportunities for specific evaluation of county policies and practices.
2. Any attempt to analyze strengths and weaknesses in a school program ultimately necessitates a study of the effect of county policies upon the guidance function.
3. There is some evidence that a school staff can do a creditable job of determining extensiveness of provisions and practices, and can evaluate the general climate of the program.
4. The ability of the staff to appraise the effectiveness of procedures and practices seems to be limited, and there is an implication for follow-up research to determine the effectiveness of any procedures used in guidance.

The validation studies indicate some strengths and weaknesses in the Baltimore County program of guidance services, which are summarized in the following statements.

1. The effectiveness of teacher participation in most schools is (to some extent) limited by a seeming lack of understanding of basic principles of child development.
2. The schools in general probably present an atmosphere consistent with the basic principles of a democratic organization in which the individual is valued for himself alone. This is important for the development of good guidance services.
3. The members of the school staff give evidence of good mental hygiene.
4. The activities of the counselor do not allow sufficient time for the attainment of the chief goal of counseling, namely increasing self-direction in problem solving.
5. The pupil-counselor ratio now provided is too great to permit the maximum development of all aspects of the guidance program.
6. The work year needs to be lengthened to permit adequate follow-up and research, community surveys, and proper procedures for placement.
7. The salary schedule for counselors is limiting the supply of counselors at a time when increasing enrollments and expanding programs are increasing the number of positions which must be filled.

8. The provision of professional secretarial help has improved the personnel situation.

9. The provision for units in the curriculum where educational and occupational information is presented to all pupils seems important to the proper development of the guidance services. There is need to provide evidence of the effectiveness with which the information is presented.

10. The wide variation in the degree to which individual schools seem to be achieving the development of mature individuals suggest a need to develop a program of research as a basis for the evaluation of the effectiveness of the educational program.

RECOMMENDATIONS

Recommendations for the improvement of county policies and practices are as follows.

1. Appoint counselors on a ratio of one counselor to four hundred pupils.
2. Employ counselors for eleven months with a 10 per cent increase in the annual salary.
3. Increase the amount of professional secretarial help to a minimum of one full-time secretary to a guidance office in a local school.
4. Appoint an assistant supervisor of guidance so that time may be available for the preparation of local occupational materials, research, and more in-service training.
5. Develop a county-wide policy covering placement, follow-up, and adjustment services.
6. Provide county-wide in-service training programs for counselors in follow-up and other research techniques.
7. Encourage classroom teachers to participate in the child-study program sponsored by the Board of Education and the Institute of Human Development of the University of Maryland.
8. Provide in-service-training programs for classroom teachers in the area of the guidance function, allowing credit for the renewal of certificate.

RECOMMENDATIONS FOR FURTHER RESEARCH

Faculty groups seemed to have an understanding of the basic guidance services, and a recognition of those aspects of the services which are needed but lacking. Efforts to appraise the effectiveness of practices and procedures in terms of general education goals seemed to be less valid and inconsistencies were noted. The writer feels that sporadic follow-up and research studies are inadequate as a means of evaluating the outcomes of an educational program. Long-term research in a number of areas is necessary before we can hope to have evidence that we are successfully meeting our educational goals.

Any long-term research program should be designed to measure the effectiveness of the total program of education rather than specific outcomes of guidance practices per se. Such research should seek answers to the following questions.

1. How mature are the pupils graduating from senior high school?
2. What is happening to the pupil who drops out of school before graduation?
3. How well did the school predict educational, vocational, and civic success?
4. How do pupils, school leavers, and parents feel about their educational experiences?

CONCLUDING STATEMENT

The study has provided an appraisal of the guidance programs in ten senior high schools of Baltimore County, Maryland. Interest has centered in the process as well as in the results of the evaluation. The study has emphasized the need to support normative surveys and self-appraisals with objective data measured against specific criteria of effectiveness. It is hoped that the study may stimulate other school systems to use evaluation processes, not only to improve programs of guidance services, but to contribute to the development of more adequate criteria and more effective instruments of appraisal. Critical analyses of the processes employed will provide for better techniques and may reduce the tendency to make broad assumptions without adequate supporting data.

THE RELATIONSHIP BETWEEN VARYING DEGREES OF CENTRALIZED CONTROL AND ORGANIZATIONAL PATTERNS FOR SELECTED ASPECTS OF TEACHER EDUCATION IN MULTIPLE PURPOSE INSTITUTIONS

by GEORGE HERBERT CHARLESWORTH*

The Problem

Opinions differ as to the best organization for teacher education programs in large multiple purpose institutions. One institution may operate on the assumption that teacher education is the responsibility of two or more departments or divisions of an institution, whereas another may delegate the responsibility for the education of teachers to a single, well organized department, school, or college of education. This is a study of the relationship between varying degrees of centralized control of teacher education programs and organizational patterns for selected aspects of teacher education programs in multiple purpose institutions. More particularly, it attempts to determine varying degrees of centralized control and the relationship between varying degrees of centralized control and the following aspects of teacher education programs: the development of policies and objectives, the curriculum for teacher education (general education, subject field preparation, and professional preparation), student personnel policies, student teaching, graduate and extension work in teacher education, and facilities and cost for teacher education.

Procedures

Data for this study were secured largely through personal interviews with those in charge of teacher education programs at thirty-four multiple purpose institutions and through observation of the facilities for teacher education. Forty-six questions were asked during structured interviews at each institution. The responses to some of the questions on ten areas of teacher education seemed to indicate some degree of centralized control by a single agency over these areas. A panel of twenty experts in teacher education rated each statement on a scale from one, meaning very decentralized, to eleven, meaning the highest degree of centralized control possible. Each panel member was also asked to express his preference of the various organizational patterns for the areas of teacher education studied. When the panel had rated the statements which described a degree of control over the various areas of teacher education, seven programs of teacher education were found to be in the least centralized group, four were found to be in the middle range group, and twenty-three programs were found to be in the centralized group. For purposes of comparison this latter group was again divided into subgroups which were called the *more* centralized and *most* centralized programs.

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* A.B. 1938, Houghton College; A.M. 1947, University of California at Los Angeles; Ed.D. conferred October 18, 1958. Professors in charge of research: James Harold Fox, *Professor of Education;* W. Earl Armstrong, *Consultant in Research.*

REVIEW OF THE LITERATURE

A thorough search of the literature revealed only a few studies dealing with the organization and control of various areas of teacher education. The writer therefore supplemented this material with a section on "statements" from the literature on the organization of teacher education. Although the literature did not provide specific answers to questions asked in the introduction of this study, it did provide some information on several areas under investigation. Statements on the organization and control of teacher education by recognized authorities in this area were particularly helpful.

FINDINGS

This study of the thirty-four multiple purpose institutions noted nine patterns of organization for the control of teacher education. At the majority of institutions studied, however, the teacher education programs were largely centered in a school or college of education.

At the majority of institutions the responsibility for the development of objectives and policies for teacher education was assigned to one school or college of education. A number of other organizational patterns for the formulation of policies and objectives for teacher education were also noted.

Thirty-five per cent of the institutions studied had organized advisory committees on teacher education which promoted institutional understanding of the various teacher education programs. Other patterns of organization for involving more than the staff of the department, school, or college of education in teacher education policies included faculty councils, which developed policies that were binding on departments of education, and councils on teacher education that were designed to coordinate the various schools, or divisions of the institution, which were engaged in teacher education.

This study noted a relationship between the degree of centralization and the nature of the objectives for teacher education. In general the well defined, most complete, and most recently reviewed, statements of objectives were to be found in institutions having the most centralized programs of teacher education. The study also indicated that undesirable pressures from outside the institution for changes in policy could best be resisted where these programs were well centralized.

This study of thirty-four institutions noted fifteen patterns of enrollment for students being prepared for teaching careers, ranging from the enrollment of some teacher education students in a department, school, or college of education for one year of professional work, to the enrollment of all teacher education students in a college of education for all four years. The pattern of enrollment which was considered by the panel to be the most centralized was that where the students were enrolled in a school or college of education all four years. Half of the panel members who expressed a choice, preferred this plan. The other half preferred that the teacher education students be enrolled in a school or college of education during the last two years of preparation.

This study noted a relationship between varying degrees of centralized control and the existence of common policies with regard to the admission of all students to the various curricula of teacher education. At five of the eleven programs in the decentralized and middle range groups some differences existed as to the requirements for admission to the various curricula of teacher education. There were common policies with regard to the admission of all students to the various curricula for teacher education at institutions in the *more* and *most* centralized groups. At the majority of institutions in these groups, however, requirements for admission to teacher education were higher than were the requirements for admission to other programs. This was due to the selection process to be found in these institutions.

The study indicated that a larger percentage of the total student body were known to be in teacher education in the *more* centralized and *most* centralized groups than in the least centralized and middle groups. The study indicated, moreover, that a larger percentage of teacher education programs in the *more* centralized and *most* centralized groups identified teacher education students earlier for counseling purposes, provided more complete programs of guidance, and appeared to place a larger percentage of certified teachers in actual teaching positions, than did programs in the decentralized and middle range groups.

There appeared to be a relationship between the degree of centralization and the control of, as well as the content of, the various elements of the curriculum. For example, at the institutions in the decentralized group, and at all but one institution in the middle range group, the various agencies for teacher education had little or no control over the general education phase of the preparation of teachers. In contrast, at the centralized programs, the centralizing agency specified what it considered an adequate general education for teachers, and helped to plan a general education program that was differentiated in terms of the needs of teachers.

Similarly, agencies for teacher education in the decentralized group, and half of those in the middle range group, had little or no influence over the subject field preparation of teachers. In contrast, where the teacher education programs were more centralized, there was a designated pattern for the different fields, and the centralizing agency for teacher education helped plan the subject-field preparation of teachers with the subject departments.

With respect to the professional education of teachers, this study noted that the decentralized programs appeared to be governed largely by whatever courses met state certification requirements. Most of the centralized institutions had, on the other hand, a well defined core of professional courses for all teacher education students, regardless of areas of specialization. Where teacher education programs were well centralized, the agency for teacher education either administered or controlled through supervision and by approving the instructors, all aspects of the professional education. Such was not the case at the decentralized teacher education programs. The teaching of special methods courses, for example, was frequently the full responsibility of the various subject departments, rather than a responsibility of the department of education, or other single agency for teacher education. At centralized teacher education programs, moreover, there appeared to be more uniformity in the scheduling of student teachers and longer "block of time", or full day, scheduling. It appeared also that centralization of teacher education programs result in more uniformity of procedures for supervising student teachers, and in the payment of critic teachers.

This study indicated that most of the teacher education units, which control or strongly influence both the graduate and extension programs of teacher education, were in the *more* and *most* centralized programs. The centralized programs, moreover, provided teacher education students with more opportunities for participation in educational extra-curricular activities than did the less centralized programs.

In general, the panel members did not feel that the general education, subject-matter preparation, graduate work and extension work in education, need be directly administered by a department, school, or college of education. The panel members agreed, however, that whichever agency has the responsibility for preparing teachers should strongly influence, or control, all areas of the curriculum for teacher education. They also felt that general education, as well as the professional aspects of the program, should be carefully planned and differentiated in terms of the needs of teachers. This study indicated that the programs of teacher education, where the total curriculum was controlled or strongly influenced by a single agency of teacher education, and differentiated in terms of the needs of teachers, were in the *more* or *most* centralized groups.

There appears to be a relationship between the degree of centralization and the adequacy and location of office and classroom facilities for teacher education. As noted, about 83 per cent of all the institutions in the *more* and *most* centralized groups either had separate buildings for teacher education that were not shared by other departments, or had plans for such buildings in the near future. All of the teacher education programs in the decentralized group shared buildings with other departments, and no new buildings were being considered at the time these institutions were studied.

The study also indicated a relationship between the degree of centralization and the number and type of demonstration schools. None of the decentralized programs of teacher education had demonstration schools and the only school in the middle range group was for preschool children only. Approximately the same percentage of institutions in the *more* and *most* centralized groups had demonstration schools. The increase in the degree of centralization, however, appeared to influence the extent of the demonstration school program. Of the five institutions which had demonstration schools for all grades (preschool, elementary, and secondary), four were located in the *most* centralized group.

The percentage of institutions in each group with education libraries, curriculum laboratories, and other laboratories for teacher education, increased with the corresponding increase in centralization. Centralized programs of teacher education, moreover, were apparently able to demand a larger share of the institution's budget for laboratories and other facilities for teacher education. It appears, therefore, that the programs of teacher education that are more centralized may be receiving a larger share of their institution's funds than the decentralized programs of teacher education.

RECOMMENDATIONS

Recommendations, based on the findings of this study, and supported by the opinions of a majority of the panel members, are as follows:

1. One autonomous, or fairly autonomous agency for teacher education should be given the major responsibility, within a framework of institutional participation, for developing the policies and objectives for teacher education. To promote institutional participation in the development of policies for teacher education institutional advisory committees on teacher education should be established.

2. All students who are preparing to teach on any level, or in any area, should be enrolled in a central agency for teacher education during the professional phase of their preparation.

3. A central agency for teacher education should provide a counseling

program for all teacher education students and all students preparing to teach should be required to utilize this guidance service.

4. A central agency for teacher education should specify what it considers to be an adequate general education for teachers, and it should help plan a general education program, with other departments and schools, in terms of the needs of teachers.

5. A central agency for teacher education should designate what courses are needed for the teaching field preparation and should help plan this phase of the program with the subject departments.

6. All professional courses, including the special methods courses, should either be taught by personnel of a centralized agency for teacher education or be controlled by such an agency.

7. Student teaching assignments should be made on a block of time basis by a coordinator of student teaching for all areas, or by one coordinator in the elementary and one in the secondary area.

8. Graduate work in education should be either administered by and under the full control of a single agency for teacher education or be administered by this agency for the graduate school. The central agency for teacher education should, moreover, approve the instructors and course content for extension work in education.

9. Teacher education programs in the large multiple purpose institutions should be centralized, moreover, to assure that such institutions provide adequate facilities and allocate a fair share of their budgets for teacher education.

RECOMMENDATIONS FOR FURTHER RESEARCH

1. This study has presented evidence that teacher education programs should be centralized. Research is needed, however, to develop methods of procedure which can be suggested to directors of departments, schools, or colleges of education, who desire to increase the centralization of their teacher education programs. A study of "successful procedures for increasing the centralization of teacher education programs" might be helpful.

2. All-university *advisory* committees on teacher education, as described in this study, appear to promote understanding, by all elements of the institution, for teacher education. Teacher education is considered a responsibility of the entire institution even though the major responsibility for defining and administering the program rests with a single agency. The development of such committees may, at some institutions, be the needed compromise between those advocating full centralization with one agency and elements wishing to maintain a decentralized program.

A study should be made of all university advisory committees to determine methods of developing such committees and areas of their success and failure. As noted in this present study, all-university advisory committees were to be found in institutions in the *more* centralized and *most* centralized groups. It was noted, however, that institutions with the highest ratings as to centralization in the *most* centralized group did not have such committees. Reasons for this have been suggested in this present study but could be explored further in a study of the need for, and purpose of all-university advisory committees on teacher education.

CONCLUDING STATEMENT

This study has noted that there are varying degrees of centralized control for teacher education programs. Seemingly centralized programs, when examined carefully, may actually be decentralized in one or more areas of teacher education.

Evidence presented in this study indicates that all major areas of teacher education programs should be well-centralized. This study, which ranked the thirty-four institutions according to the degree of centralization of their teacher education programs, supports the conclusion that as the degree of centralization increases, programs are likely to be improved.

ADMINISTRATIVE ORGANIZATION OF THE LARGER HIGH SCHOOL

by WYLIE HAYDEN RUSSELL*

The Problem

This dissertation is concerned with (1) administrative organization of the high school with an enrollment in excess of 1,000 pupils and (2) an attempt to make recommendations for improvements in this organization as a result of the study.

Procedures

The research procedures consisted of the following:

1. A review of the literature pertaining to administration of the larger secondary school, with emphasis on review of previous researches.
2. The compilation, on the basis of the literature, of a list of responsibilities of specialized administrative personnel.
3. An analysis of these problems and responsibilities resulted in the identification of 8 sub-problem areas for investigation as follows: (1) general administrative staffing, (2) provisions for office management positions, (3) responsibilities of the assistant principal, (4) administration of guidance, (5) provisions for department heads, (6) the dean as a subordinate administrator, (7) the classroom teacher and administrative responsibilities, and (8) direction of extra-class activities.
4. The preparation of a questionnaire designed to disclose data concerning administrative organization of the larger secondary school, and the professional positions most frequently used.
5. The tabulation and statistical analysis of the data to determine relationships between provisions for the positions and accrediting association area or pupil enrollment size of the schools involved in the study.

The study was limited to schools enrolling the last three or four years of secondary grades which offered a program leading to a high school diploma.

Questionnaires were sent to principals of 423 secondary schools. Replies were received from 411 of these schools. This was a 97 per cent return from the sample. The major portion of the study was based on these returns.

Findings

The findings reveal that there is no clear-cut pattern for administrative organization of the larger high school which is based on pupil enrollment. Additionally, there appears to be little relation between location of school and organization for administration. Among the major findings were the following:

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* A.B. 1944, Ed.M. 1948, Oklahoma City University; A.M. in Ed. 1953, The George Washington University; Ed.D. conferred October 18, 1958. Professor in charge of Research: James Harold Fox, *Professor of Education.*

1. The relationship between pupil enrollment and size of administrative staff varies widely. The ratio tends to be considerably larger for schools of 2,500 pupil enrollment or more than for schools below this enrollment.

2. The designation of administrative positions varies widely. The variation was also evident in analyses of office management positions. A total of 38 different administrative positions was reported. There was a lack of agreement on both number and kind of positions needed.

3. In general, there was no statistically significant difference in mean provisions for administrative positions, between accrediting association areas. The only exception to this was found between mean provisions reported by the Middle States and Southern accrediting association areas.

4. There was a statistically significant difference, at the .01 level of significance, in the distribution of office management positions from area to area. The number of office management positions provided was directly related to school enrollment size and location of school.

5. The position of assistant principal was the most frequently reported administrative job.

6. There is great variation in assignment of responsibilities to the assistant principal. Many really serve as assistant-to-the-principal with little power to make decisions.

7. The position of director of guidance, as a line administrative officer, is seldom found in the schools of this study. This is particularly true of the school whose enrollment exceeds 2,500. The position is most frequently looked upon as a staff position without major power or decision-making responsibility.

8. The director of guidance is generally considered to be responsible for records and management operations. There are rarely any supervisory responsibilities. The position is apparently that of head counselor.

9. Many schools have no full-time guidance counselors. No enrollment group below 4,000 reported the existence of these positions by as many as 75 per cent of the respondents.

10. The provision of department head was generally found in schools enrolling 2,500 pupils or more. The existence of department heads varied significantly from area to area. These differences were significant at the .001 level of significance.

11. The position of dean of girls was more frequently reported than that of dean of boys. Both the dean of boys and dean of girls were primarily disciplinarians.

12. Administrative responsibilities assigned to the classroom teachers are of two kinds—those involving many of the extra-class activities and those which are managerial such as school bookkeeper, manager of the textbok room, and cafeteria cashier.

13. Administrative responsibilities of teachers responsible for extra-class activities varied widely. No common or standard practice was revealed.

14. There was no general agreement that extra-class activities were a part of the educational program. Less than one-half of the respondents indicated that teachers were expected to have training for extra-class activity sponsorship.

15. A position for supervision of instruction was seldom mentioned. Only 21 such full-time positions were reported by the more than 400 respondents.

16. Administrative organization of the larger high school is in a highly unstandardized condition. It is evident that the existing organization has not resulted from an objective study of administrative needs. Instead, it appears that administrative organization of these schools is a result of traditional practices and expediency with some minor modifications. These modifications may be the result of local or area study groups, research, or reports of successful practices.

RECOMMENDATIONS

1. Job classification studies are greatly needed as a basis for development of standard management practices. These should include a standardization of designations for administrative positions and the attendant responsibilities.

2. Administrators need to be familiar with such standard practices in organization as may be established. There is a need for understanding of the differences between the assistant and assistant-to concept in administrative structure. Administrators need to be familiar with the differences between staff and line positions.

3. Studies need to be made of proper pupil/administrator ratios. Present ratios between pupil enrollment and number of administrative positions provided reveal widely variant practices.

4. A study needs to be made of the guidance purposes of the secondary school. This study should include an analysis of responsibilities.

5. More attention needs to be given to the supervision of instruction in the larger high school.

6. A study needs to be made of the kinds of responsibilities which may be properly delegated to the classroom teacher. A clear-cut division between administrative and clerical responsibilities is needed. If there is a need for part-time administrative personnel, it would appear that

the teacher responsible for the duties should have adequate time for their completion.

7. A study needs to be made of the purpose of extra-class activities. Adequate results cannot be expected from an enterprise whose director is not required to have training for the position.

CONCLUDING STATEMENT

This has been a study of administrative organization in the high school with a pupil enrollment of 1,000 or more. It has been concerned with the kind and number of administrative positions used by these schools and the responsibilities delegated to the various positions. The study has indicated that there is great variation in the administrative structure of the responding schools.

Professional staff members and classroom teachers are frequently responsible for clerical and managerial duties. There is seldom a provision for a full-time position for supervision of the program of instruction. Less than one-half of these schools indicated the existence of a position known as director of guidance.

It is hoped that this study will stimulate interest in additional research concerning the administrative organization of large high schools. Such studies might disclose whether the wide variation in administrative structure has an identifiable effect on the total program of the school.

QUALIFICATIONS, PREPARATION, AND COMPETENCIES OF TRADE AND INDUSTRIAL TEACHERS

by JOHN PATRICK WALSH*

The Problem

Programs for the training of teachers of trade and industrial subjects require critical evaluation and revision to keep pace with developing professional standards, advancing certification requirements, and rapidly changing technology. In order to establish valid criteria for trade and industrial teacher training curriculum revision it is necessary to identify and define the competencies needed to perform successfully the functions expected of a qualified teacher of trade and industrial subjects. In revising teacher training curricula, provision must be made for the development of the identified competencies through eduation, training, and experience both prior to employment as a teacher and on an in-service continuing basis.

The purpose of this study was four-fold:

1. To examine critically existing requirements for the certification of trade and industrial teachers.
2. To examine critically all of the elements of the existing program for the training of trade and industrial teachers.
3. To identify, define, and evaluate the functions and competencies considered necessary for successful trade teaching.
4. To provide or identify ways and means of achieving teacher training curriculum revision to develop the necessary levels of competence.

Procedure

It was considered important to involve representatives of organized groups having a direct concern in the training of teachers and in the employment of such trained teachers. The National Association of Industrial Teacher Educators and the National Association of State Supervisors of Trade and Industrial Education, both subgroups of the American Vocational Association, were invited to designate representatives as advisory committees for the purpose of offering assistance throughout the several phases of the study. In addition, an independent advisory panel, composed of heads of departments of industrial teacher training and other representatives of colleges and universities throughout the nation, was organized to assist in the initial stages of the development of the study. A steering committee drawn from the independent advisory panel assisted in guiding intimately all phases of the study.

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* B.S. in Ed. 1939, New York State Teachers College, Buffalo; M.S. in Ed. 1947, Cornell University; Ed.D. conferred October 18, 1958. Professor in charge of research: Anthony Charles LaBue, *Professor of Education.*

A preliminary and thorough review of the literature pertinent to the training of trade and industrial teachers preceded the organizational phases of the study. Plans were presented to the associations concerned for their support. Committees then functioned in developing and refining various phases of the work.

Techniques employed throughout the several phases of the study included: advisory committee discussions, steering committee conferences, national association reviews, staff conferences, group interviews, individual depth interviews, jury validation techniques, questionnaire utilization, analysis of legal documents, and a national conference for the purpose of summarizing and analyzing the findings of the study. Respondents to the several questionnarie phases of the study included a sample of successful teachers of trade and industrial subjects, a sample of local administrators and supervisors of trade and industrial subjects, the population of state supervisors of trade and industrial education, and the population of state teacher trainers in trade and industrial education.

Part IV of the study, The Competencies of Trade and Industrial Teachers, was concerned with identifying and validating a list of competencies of trade and industrial teachers. In order to establish the relative importance of such competencies, all groups concerned were involved in an evaluation procedure. The original list of competencies was determined as a result of committee action and review of the literature. This list was validated through a jury procedure involving representatives of all groups concerned with the development and utilization of trade and industrial teachers. The final list of one hundred seven competence items was evaluated by over eight hundred fifty respondents.

The major group of respondents was composed of selected, successful teachers as designated by state supervisors of trade and industrial education. The successful teachers were divided into three groups: those who had completed preparation prior to June 30, 1948; those who had completed preparation since July 1, 1948; and those who had completed training during the past five-year period. Additional evaluating groups included local administrators and supervisors of trade and industrial education, state supervisors of trade and industrial education, and state teacher training personnel. All respondents were given the opportunity of indicating the relative level of importance that they placed on each of the competencies. A rank order of importance of the one hundred seven competence items was developed for each of the six groups. The six sets of ranks were compared and a coefficient of concordance was established. An exceedingly high level of agreement between the ranks established by the six groups was indicated. Because of this significant agreement, a composite rank order was established to indicate the relative importance placed on each item by all respondent groups by using the sum of the ranks established for each item by the six groups. This appeared to provide the best estimate of the ranking of the competencies by the total respondent group.

SUMMARY OF THE FINDINGS

The Certification of Trade and Industrial Teachers

The analysis of state certification requirements for trade and industrial teachers indicated that extremely wide variations occur across the nation in established minimum requirements for such certification categories as basic education, trade experience, and professional education. Wide variation was also found in the terminology used to describe various types of certificates issued to teachers for similar purposes.

Greatest variation occurred in the professional education area. Clock-hour requirements for such professional preparation ranged from a minimum of zero to five hundred seventy-six clock hours. In too many instances, it was noted that the requirement called for only an indication of an interest on the part of an individual to participate in teacher training when such training was available. In like manner, there was little similarity among the states in the amount of teacher preparation that was required prior to service as a teacher. For the most part, teacher preparation takes place after the initial employment of the teacher. This in-service education was unorganized in almost one-third of the states and territories.

Trade experience requirements, while showing less variation than the professional education requirements, are not clearly defined in many of the states. The experience requirement, stated in years, may or may not include an initial period of apprenticeship or learning activity. Too few states provided for a test of competence in the teaching field resulting from such trade experience.

Consideration was given to procedures to be followed for the revision and upgrading of certification standards of trade and industrial teachers. It was clearly indicated that certification standards should be determined through a systematic analysis of competencies needed by trade and industrial teachers. Group procedures involving representatives of the groups directly concerned and identified with the work of the teacher should be coordinated by state personnel in trade and industrial education for the purpose of developing reasonable and mutually acceptable standards that are professionally sound.

The Preparation of Trade and Industrial Teachers

There were three basic organizational plans for the preparation of teachers of trade and industrial subjects. These three plans were:

1. Designation of a college or university as a state teacher training institution.
2. Appointment of a state teacher training staff.
3. Assumption of the function of teacher training by the state supervisory staff for trade and industrial education.

Fifty per cent of the states and territories conducted programs for the training of trade and industrial teachers through designated colleges or universities. Thirty-three per cent of the states and territories conducted programs of teacher preparation through the use of their regularly assigned state supervisory personnel. Seventeen per cent of the states and territories designated teacher training personnel at the state Department of Education levels in conducting their teacher training program.

Too many of the trade and industrial teacher educators were assigned the task of training trade and industrial teachers on a part-time basis. Specifically, of the one hundred twenty teacher educators reporting, their effective strength was equal to only eighty-eight because of part-time assignment. In addition, these trade and industrial teacher educators spent only 50 per cent of their time in the area of instruction.

The respondents indicated clearly the values they place on the contribution of specialized teacher preparation courses to their success as trade and industrial teachers. They were emphatic in the reason they stated for the selection of the course "Trade Analysis and Course Construction" as being the most important contributor to their success. In like manner, they selected the courses "Methods of Teaching Industrial Subjects" and "Development of Instructional Material" among the first three in terms of their contribution to teaching success.

Successful teachers and teacher educators ranked highly the relative importance of direct professionalized experiences in a preparatory program. They rated especially high such experiences as supervised practice teaching, planned observation of teaching, and planned visits to industrial plants. Other experiences considered to be important in the preparation of trade and industrial teachers were: journeyman experience in the trade, specialized in-service preparation for trade teachers, general teacher preparation including educational psychology, history and philosophy of education, and exchange of ideas and observation of work done by professional personnel in areas related to trade teaching.

Local administrators, state and local supervisors, and teacher educators expressed considerable dissatisfaction with the level of recently prepared teachers. Only 40 per cent of the group indicated that they were satisfied with the level of preparation. Forty-five per cent indicated dissatisfaction and 15 per cent were undecided. A considerable degree of satisfaction was shown for:

1. Experiences and skills in the trade to be taught
2. Understanding of the objectives of trade and industrial education
3. Ability to demonstrate the skills of the trade
4. Ability to develop safe work habits
5. The tendency to teach at the appropriate level.

However, considerable dissatisfaction with the level of recently prepared teachers was expressed with reference to:

1. Experience in the preparation of instructional materials
2. Preparation in testing and evaluation
3. Orientation to the types, locations, and services provided by community organizations concerned with industrial education

The Competencies of Trade and Industrial Teachers

Successful teachers of trade and industrial subjects, local and state supervisory personnel, and teacher educators in evaluating the relative level of importance of competencies of trade and industrial teachers indicated that some of the most important competencies were those that dealt with the development of attitudes on the part of their students toward safe practices and safety consciousness in performing the tasks for which they were being trained. Competencies also considered to be of most importance were those that dealt with the ability to use and understand the various teaching techniques. Included were abilities to motivate students, stimulate and maintain interest through the instructional process, demonstrate skills of the trade, and to analyze a trade for its instructional content. The tables presented in Chapter VII indicate the relative importance which successful teachers placed on the several competencies as well as comparing the teachers' ratings with those of local and state supervisors and teacher educators. Table 63 presents a composite rank order of the one hundred seven competence items which was arrived at by utilization of the sum of the ranks established by each of the six groups involved in the evaluation. This appeared to be the best estimate of the rank order because of the high degree of relationship as determined by the Kendall coefficient of concordance of .821 which was found to be significant at the .01 level.

RECOMMENDATIONS

In the light of the increasing mobility of trade and industrial teachers, consideration must be given to the development of common patterns in teacher preparation and certification in order to bring about reciprocity of certification among the several states. If such reciprocity is to be analyzed in order to determine which competencies are best developed on the job after the teacher begins to teach.

4. Problems of beginning teachers should be analyzed according to their levels of proficiency in the competencies cited.

CONCLUDING STATEMENT

This study is a comprehensive analysis of the qualifications, preparation, and competencies of trade and industrial teachers. The data provide an analysis of the certification requirements of the several states as well as an analysis of the existing programs for the preparation of trade and industrial teachers being prepared to meet the certification requirements. The phase of the study dealing with the identification and validation of the competencies of trade and industrial teachers indicates that certain of the requirements for certification and certain of the elements of the program for teacher preparation are not in keeping with the need to develop such competencies. A careful review of certification requirements and teacher preparation programs is therefore indicated.

SUMMARIES OF DISSERTATIONS
SUBMITTED FOR
THE DEGREE OF
DOCTOR OF BUSINESS ADMINISTRATION

THE USE OF MANAGEMENT CONSULTANTS BY THE UNITED STATES AIR FORCE

by WARREN KENNETH WATSON[*]

INTRODUCTION

Demands being placed on the knowledge and skills of managers have increased tremendously during the past few generations. Complexity of operation is unavoidable; daring innovation is commonplace. This situation has forced managers to rely on the advice and services of management engineering consultants. Operation in the United States Air Force is no exception. As executives in the Air Force try to achieve effective utilization of the resources made available to them, they find that the decision-making process is dependent more and more on complex data and technical knowledge. Unlike private business, the Air Force has little or no control over resources made available. The Congress of the United States determines what amount of the nation's resources can be allocated to national defense, and the Air Force receives its fair share of this amount. The Air Force manager is concerned with doing the best he can with the resources he has, rather than with increasing the amount of resources available.

The present scheme of military operation is characterized by an austerity program. Ceilings are placed on the amount of manpower available, and the trend is toward a constant lowering of these ceilings. In addition, there are continual changes in the missions imposed by higher authority and even greater changes in the resources made available to accomplish these missions.

The Air Force has sponsored many programs designed to encourage everyone to achieve effective utilization of resources; often knowledge of what to do is lacking—not motivation. To offset the lack of knowledge, the Air Force turned to management consultants. First, outside consultants were hired. Now emphasis is being placed on the use of internal consultants.

For the foreseeable future, the Air Force will continue to use management engineering consultants. Action must be taken to assure that when consultants—contract or in-service—are used, they are used effectively, and that their efforts are evaluated fairly in the best interest of the Air Force.

In most instances, definitions are given in the text; a few terms are defined separately. Outside consultant, contractor consultant, and contractor are terms used interchangeably in reference to private management consultant firms, public or private universities, and individuals who perform, or seek to perform, management engineering services for the Air Force. Internal consultant and in-service consultant are terms used interchangeably in reference to management consultants provided from within the Air Force. Management consultant and consultant are terms used for either outside or in-service consultants. Even though the more general term of management consultant is used, the reference is always to management engineering consultant services.

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[*] B.B.A. 1938, Michigan State College; M.B.A 1949, University of Pennsylvania; D.B.A. conferred February 22, 1958. Research Advisory Committee; Richard Norman Owens, *Professor of Business Administration, Chairman*; David Springer Brown, *Professor of Public Administration*; Donald Stevenson Watson, *Professor of Economics*.

The study is limited to the use of management consultants by the Air Force, except when comparisons are made with other organizations. The study discusses the use of both outside or contractor management consultants and internal or in-service management consultants. Further, the study is concerned with peace-time operation of the Air Force rather than with war-time operation.

THE NATURE AND ROLE OF THE MANAGEMENT ENGINEERING CONSULTANT

Although there are natural differences in the way the outside and in-service consultants operate, the fundamental characteristics are the same. In either case a client-professional adviser relationship exists. The Air Force makes no distinction between them as far as a request for consultant service is concerned. The requesting agency asks for assistance without specifying outside or in-service consultant.

Historically, the management consultant profession goes back almost to the dawn of history, but for practical purposes it is presumed to have started during the latter part of the nineteenth century. In recent years, the consultant profession has achieved acceptance with gross revenue amounting to hundreds of millions of dollars annually. As a profession, the consultant business seems to have moved into its "second mile" and is achieving professional status with its own code of ethics and with some sense of social responsibility.

The functions performed and services rendered have expanded over the years, and the "efficiency expert" of three decades ago has become a hired superman, a co-strategist, a talent scout, a policy adviser, a hatchet man, a nay-sayer, and a new business finder.

Basically, it must be remembered that the consultant supplements, but does does not supplant, management. He does not perform miracles. The consultant must be accepted in good faith, proper liaison must be provided, and all pertinent material must be made available. Specific goals should be established. Often fine results are achieved if members of the client's staff are assigned to work directly with the consultant group. When both management and consultant discharge their obligations properly, the likelihood is very favorable that the management engineering projects will move from constructive start to successful completion.

THE SELECTION OF CONSULTANTS

Although they have both advantages and disadvantages, it is considered valid, generally, that the management engineering consultants make a contribution to those who hire them, and to society. They bring distilled experience, fresh viewpoint, analytical appraisal, and objectivity to problems which require management engineering assistance.

In the determination of whether to use outside or in-service consultants, there are a number of factors which can be considered. The availability of an in-service capability and the lower cost of such service have an important bearing. There are factors which favor use of an outside consultant. Often stressed are the greater degree of objectivity and the detached or independent viewpoint. Sometimes specialized or unique skills are required to solve the problem. Also, the outside consultant may bring prestige to the project and may help avoid internal politics. Viewpoints expressed by Air Force executives showed that in most instances service from outside consultants is satisfactory.

If the decision is made to hire outside consultants, certain selection criteria are available to help assure that the best choice is made. The Air Force maintains records of past projects which serve as an excellent reference source. The reputation of the consultant is important. If the firm is new to Air Force operation, it can be given a limited assignment, so that inadequate performance will cause less harm. There must be assurance that principals of the consultant firm will take an important part in solving the problem and that their management philosophy is in harmony with that of the Air Force. Small firms should not be overlooked—sometimes they offer excellent specialized service. Finally, there must be assurance that the consultant firm is as good at solving management engineering problems as it is in selling its services.

THE UNITED STATES AIR FORCE ORGANIZATION AND ITS RELATIONSHIP WITH THE MANAGEMENT ENGINEERING FUNCTION

The keynote of the organization philosophy in the United States Air Force is: any organization must be mission oriented and must have flexibility to meet changing situations. The underlying doctrine aims at the ultimate in standardization, flexibility, and functional utilization. Emphasis on flexibility causes some difficulties in organizing to solve problems which require management engineering assistance.

The organization of the USAF can be shown in three separate segments: Office of the Secretary of the Air Force, Headquarters, USAF, and the Major Commands. Surveillance of the kinds of problems

Staffing for the in-service consulting program is a serious problem. The skills required to implement a management engineering program are not identified for personnel assignment purposes, nor are they designated accurately on manning tables. A new Consultant Specialties grouping is being included in the personnel classification structure and a functional code is being prepared to identify management engineers on manning documents. Finally, action must be taken to develop an adequate training program for the management engineering skill.

Organizational placement of the management function has been a problem for a long time. Although there is some support for placing the function to report to command level, this action does not have total acceptance. The function should not be placed arbitrarily in the organization but should be performed so well that it earns its proper place. Its placement is a matter of management philosophy, not of size or production.

USE OF INTERNAL MANAGEMENT ENGINEERING CONSULTANTS BY THE UNITED STATES AIR FORCE

The management engineering consultant program at Headquarters USAF operates under a "home office" concept. Under this concept, the in-service consultant group is used to give advice to the field installations and make recommendations, but its representatives do not become working members of the project for protractive periods. This concept was formulated because the in-service capability is limited, and if the services of all of the management engineers were committed for longer periods, the consultant service would become inflexible.

In order to administer requests for in-service consultant service, a working committee has been established at Headquarters USAF to identify, select, and program such requests. All interested staff agencies are represented on the committee, and the validity of the requirement for service, as well as the best method of meeting the requirement can be determined.

The "home office" concept is workable only if there is a management engineering capability developed within the major commands. Action must be taken to assure adequate communication on management engineering matters throughout the Air Force. All echelons must be kept informed on developments relative to the management engineering program. Further, information relative to findings and results of completed consultant projects at any echelon must be given wide dissemination. The information media essential to good communication are in being; it is only necessary to assure that such media are used effectively.

The best method for solving a problem is to form a task force, consisting of management engineers, staff specialists, and operators, all supported by the commander or equivalent.

In addition to using command lines and echelons to develop a management engineering program, the feasibility of using functional channels should be explored.

CONTROL AND SUPERVISION OF IN-SERVICE CONSULTANT PROJECTS IN THE UNITED STATES AIR FORCE

To assure the greatest opportunity for success in conducting management engineering projects, certain administrative actions are essential. There must be a clear understanding by both consultant and client as to what is expected. The authority which underlies the presence of the consultant on the project should be established formally. A plan of action should be worked out in advance in as much detail as possible. The administrative controls which are described below are usable by both outside and in-service consultants, but the specific application is for in-service consultant use. These controls can be used as a guide and a point of reference for experienced consultants and project officers as well as for orientation of those who are starting on their first project. A work statement should be prepared to serve as a frame of reference within which both the consultant and the client can operate. It presents the requirements of the client and establishes the limits within which the management engineering consultant will confine his activities.

A project charter is essential to fortify the task force with visible, concrete evidence of its authority for conducting the project. The project plan describes the full operation. A formal memorandum of agreement should be worked out with other staff agencies when the project requires specialized assistance. Briefing sessions should be provided for as a normal method of communication in the everyday job of completing the project.

In some ways, the requirement to achieve acceptance of his efforts which faces the management engineering consultant is refinement of all of his other efforts. The consultant's organization may be sound, the personnel working on the project well qualified, and the solution to the problem well within the scope and ability of the consultant task force. In spite of these plus factors, if the presence of the consultant group, as well as their efforts and their recommendations are resented, everything else goes for naught. The problem of achieving acceptance is one faced by all consultants. The consultants must show by their manners and actions in all of their associations that acceptance is deserved. Being a fine management engineering consultant is not sufficient for success or acceptance—sales ability is vital.

CONCLUSIONS

The Air Force is committed to using management engineering consultants because they are making significant contributions to Air Force operation. Probably, the outside consultant will always be used to some degree. Air Force problems which require consultant assistance encompass the entire range of operation. The Air Force organization permits development and control of a management consultant program at all echelons.

The development and implementation of an in-service management consultant program Air Force-wide is feasible, but demands sound personnel and communication actions. Such a program would appear to work best with decentralized operation. Actual conduct of management engineering programs at any level can be accomplished best by use of task forces. Administrative procedure can be established to assure the effective control of management engineering projects. The present development of a management engineering capability was concentrated at Headquarters USAF. Future development will expand to include capability within major commands.

RECOMMENDATIONS

It is recommended that:

1. The Air Force continue to use both outside and in-service management consultants, and combinations thereof, to help solve operating problems.

2. The Air Force establish policies to encourage the use of management consultants to supplement the regular staff, rather than to supplant it.

3. Control of the management consultant program continue to be workable throughout the entire Air Force organizational structure.

4. Management engineering consultant service at higher echelons in the Air Force be concentrated on systems type problems, that such services at Wing level be concentrated on work-center-type problems, and that such services at intermediate levels be arranged so as to integrate both types of problems.

5. Commanders be directed to establish management engineering capabilities in consonance with the requirements for such services, and that they be encouraged to place the capability organizationally in such a way that it is directly accessible to the command section.

6. The Air Force immediately and aggressively develop and maintain an in-service management consultant program Air Force-wide which will include sound personnel staffing and communications programs.

7. Management engineering capability be decentralized within the Air Force through both command and functional channels and that the task force concept of operation be utilized.

8. The Air Force prepare and publish documents and instructions which will enable management engineering task forces at any level to plan, conduct, and control projects.

AN ANALYSIS OF OUTSIDE-STAFF SERVICES AVAILABLE TO MANAGEMENT (WITH EMPHASIS ON THEIR APPLICATION TO THE SPECIAL PROBLEMS OF SMALL BUSINESS)

by ROBERT FENN TOWSON, JR.*

Background

Management has had access to the services of outside staff-specialists since the time when Frederick W. Taylor set up independent practice as a consulting engineer in 1893. The ensuing sixty-five years have witnessed an unusual expansion in the industrial base of the nation. The most significant aspect of this growth has been the development of the large industrial enterprise.

Some students of the economic structure feel that the disparity in size between big business and its smaller counterpart gives an unfair advantage to the larger sector. They argue that specialization in administrative and technical skills permits big business to monopolize the human, financial, and physical resources available to the economic structure. They believe that this creates an unhealthy situation.

The Problem

Economists have long been cognizant of the fact that there are certain advantages in large-scale operations. This, in itself, is not sufficient justification for the study that has been undertaken. If, however, this trend toward increasing size works to the disadvantage of small business, a problem does arise. The problem assumes important proportions if the smaller sector is found to be an integral, most necessary part of the total economic structure.

This study assumes that both big business and small business are integral to a healthy business structure. It does not see one arrayed against another in a battle for survival. But it does see the large sector attracting human and financial resources that are much needed by small business.

At the same time, human resources are being diverted from the main channels of business activity into professional groups offering services on a fee basis to all business enterprises. The movement that started with Taylor has assumed such proportions that there are now more than

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* A.B. in Govt., M.B.A. 1952, The George Washington University; D.B.A. conferred June 4, 1958. Research Advisory Committee: James Carleton Dockeray, *Professor of Finance, Chairman;* Donald Stevenson Watson, *Professor of Economics;* Everett Herschel Johnson, *Professor of Statistics.*

2,000 firms and almost 20,000 individual consultants that are outside the business structure.

The Federal Government has recognized that financial resources are not available to many small businesses. It has created the Small Business Administration in an effort to serve the needs of this sector.

This student, faced with a choice, has concentrated on the problem of human resources. Financial aspects of the small-business problem are discussed in appropriate sections—but as incidental to the main purposes of the investigation.

The problem undertaken is to see if these outside agencies have the human resources so sorely needed by small business. If this is established, it then becomes necessary to investigate how these resources can be made more accessible to the small business sector.

METHOD OF INVESTIGATION

It was first necessary to establish that there is a need for the human talents located in these outside agencies. This student was fortunate in being able to interview personally hundreds of small-businessmen concerning this aspect of the problem. The best evidence he could find of the need was the willingness on the part of these executives to engage these consulting agencies.

During this period, this student became convinced that the small-businessman was not always serving his most important need by this process. At the same time, he was aware that the talents to serve these requirements were available in outside-staff agencies. This situation indicated that small business did not have sufficient knowledge of the talents available.

The next step in the investigation was to inventory the resources that were available to business. This was accomplished by preparing a brochure which included most of the types of services that were being offered. Some were so specialized that they could be considered inaccessible to the average small enterprise. The problem was approached by arraying a group of complementary services and providing a common channel of representation. This phase was then tested by taking the brochure into the field. The acceptance of this approach was encouraging, but problems still remained.

Field representation is a costly function which adds considerably to the billing for the actual services. There was also the difficulty of follow-up. The specialists remain on the scene for a relatively short time. There is no assurance that management is capable of absorbing the changes in the short term of the engagement. Provision must be made for check-up on improvements effected, and this adds to the cost.

Sufficient data had been accumulated by this time to provide the student with hypotheses as to solutions to the problem. The method used in his discussion closely paralleled his work in the field.

Discussion of the Problem

The discussion first surveyed the field of outside-staff assistance. The next step was to discuss the operating procedures of consulting agencies. The third and final step was to evaluate the present status of these services and their accessibility to small business. Here, it was found that the present approach was not always appropriate for the smaller enterprise. It was also found that there were significant gaps between the services and the needs of small business. These findings provided the material for the summary and conclusions.

A major portion of the study was, of necessity, the survey of the field and a discussion of operating procedures. The practice that was once the domain of the consulting engineer has expanded until it now encompasses a vast area. Research agencies, public accountants, advertising agencies, financial institutions, economists, mathematicians, sociologists, psychologists, and educators are some who have rather recently entered the field of business consulting.

We say rather recently, because the tremendous expansion of the field is a post-World War II phenomenon. Until that time, the consulting management engineers and the industrial engineers—sometimes, but not always, the same practitioners—had the field more or less to themselves.

It was a relatively simple task to array the agencies now serving business in a consulting capacity. It was not so simple to discuss their operating procedures. One reason for this lies in the natural reluctance of the practitioner to discuss his "trade secrets" and his client relationships. A more significant reason is that each business situation is different and calls for an individual approach.

One group that has a uniform approach and also points its services toward small business is the represented agencies. While they do not always conform to the ethical standards of the orthodox and old-line firms, they do have a dynamic quality that should give a clue to how outside-staff services might be mobilized in behalf of small business. Thus, a major portion of the discussion of operations was devoted to the procedures of these agencies.

The discussion of operating procedures opened with a study of client development (client-contact or new business) practices. A survey of the advertising of all agencies operating in the field was made to show how closely related they are in primary mission.

The next phase was an investigation of the personal selling function. This is predominant in the represented agencies. Here we found one firm using personal selling techniques to develop more than four hundred new clients a month.

The following chapter was devoted to the techniques of survey and appraisal. This is uniform procedure for all agencies that offer consulting services; but it has been developed to a high state by the represented firms. As a matter of fact, it is the device used by these firms to gain clients rather than to pinpoint problems.

The most difficult phase of the discussion involved installation and follow-up. The paradox of consulting practice is that the chief source of revenue lies in changes effected, not in advice given. Agencies in the field use different approaches in solving client problems. Some use cost or elimination of waste. Others use profits, often in combination with installation of new methods. A third group uses the so-called "top-management approach". In effect this is utilization of inputs or strategy—the area with which productivity analysis (as it relates to the economics of the firm) is concerned.

The particular device used to discuss installation was to take as a model a "good consultant". It was assumed that this adviser was limited only by the accumulated knowledge in the particular areas with which he was concerned. An effort was then made to reason along with this model in the various problem-areas under discussion. The areas were restricted to those with which general management was directly concerned.

The problem of follow-up is discussed in several sections of the study because it is one of the most pressing problems. Examples are given as to how agencies are endeavoring to meet the situation. The key to the solution lies in training for this is the major reason why the results from installations are not fully realized.

THE FINDINGS

Part III is, in effect, the summary section of the study. It first investigates the present professional status of the consulting profession. The following chapter details the needs of small business and illustrates how the field research set about finding the means to satisfy these needs. The final chapter summarizes the state of the art and sets forth in broad terms conclusions as to what needs to be done to make the necessary resources more accessible to small business.

Several appendixes are used to throw light on specific ways in which this can be accomplished. Excerpts from the brochure are reproduced; a prospectus for a guide to consulting practice is submitted; Motor Holding Division's (General Motors) general and financial policies are listed (as a practical example of a supplier's approach); case history outlines are included; and material on field representation is appended. The final appendix illustrates a client bulletin as a practical method of providing more information for the small-businessman.

The first specific area treated under conclusions is professional development. The creation of a professional forum is seen as a necessary first step.. This should be followed by the development of a journal-type publication. Standards can be approached in the same general way as was done in the field of investment analysis. Possibly a curriculum can be developed which will prepare candidates for the field. Finally, performance can be improved by requiring full disclosure of all pertinent facts concerning the client-adviser relationship.

The agency-community relationships provide the next findings. Group conferences, seminars, and a division of time among the very small firms are seen as possible solutions to problems in this area. Task force projects (several consulting agencies) provide a similar approach. Cooperation with local community-development organizations in assisting underdeveloped local industry is another suggestion provided.

The improvement of present agency-client relationships follows. A separate small-business division is seen as a possibility for some of the larger agencies. The redesign of services for small business is deemed advisable in many cases. A third and most important suggestion is that local agencies be used to develop clients and to provide follow-up for installations made.

Most of these changes will not come about in the near future as a normal evolutionary process. The Federal Government is in a unique position to speed progress here; and the final set of conclusions points to the means of accomplishment.

The Small Business Administration now provides management assistance, financial assistance, and technical assistance. The conclusions also discuss information services, tax policy, and the philosophy behind aid to small business.

The experiences of Motors Holding Division are cited as an example of how a sponsoring agency can render management assistance. General Motors has presumably found it both practical and profitable to render such aid. It is believed that much can be learned from such experience. Certainly financial assistance without management assistance is treating the symptoms but not the cause of the illness.

Reference is then made to the Dun and Bradstreet statistics which show that the majority of new businesses fail within the first five years of their existence. It is suggested that some of these enterprises might be worthy of help and that the courts should provide a shelter for those that can work themselves out of their situations with the proper management assistance. While this may be the philosophy behind present reorganization statutes, it certainly is not present practice. Most small businesses are summarily liquidated when they fail. The loss of each decision-maker should be considered a loss to the community.

It is suggested that government sponsor a program of cooperation between established business and new business. The student has observed several cases where such an arrangement was of benefit to both organizations. The new business provides a training ground for the executive talent so necessary to the survival of all business. Management succession is a major problem in all sectors today.

Financial assistance can best be rendered by making financing attractive to private lenders. Several suggestions are made as to how this situation can be brought about. They involve the creation of new securities, revision of tax policy, and reinterpretation of direct financial aid.

The Federal Government is seen as having the responsibility for creating a business climate that fosters innovation. It is suggested that machinery be developed to process the ideas and support the innovations of small business.

Revision of tax policy is a means for channeling private investment funds into the small business sector. Tax advantages can be given to those investors who supply the equity (and sometimes the debt) capital to new enterprise. There is precedent for such action in the incentives given for the development of oil and mineral reserves and for investment in foreign areas.

The greatest need is seen as redefinition of the problem into new business rather than small business. If this is accomplished and if the Federal Government assumes the role of a facilitating agency, full attention can be devoted to the formation of the strongest possible capital base in the small business sector.

The needs are apparent and the resources are in the hands of the outside-staff agencies. It is only necessary to provide the catalytic agent to bring them together. When this is accomplished the entire business structure will benefit and the national interest will be better served.

A STUDY OF THE BANKING SYSTEM AND ITS ROLE IN THE ECONOMIC DEVELOPMENT OF IRAQ

by ABDUL-MUNIM AS-SAYID ALI[*]

This paper deals with the banking system of Iraq and its role in the economic development of that country. Specifically, the paper examines the credit, reserve, and investment policies of the banking system and the effectiveness of the Central Bank's general instruments of monetary and banking control. It then proceeds to discuss the availability of financial resources for development purposes, the direction of bank credit, and the potential for credit expansion over the long run.

Certain facts reflect the monetary behavior of the community and show the underdeveloped nature of Iraq's financial organization. There are few banking institutions, most of which are concentrated in a few commercial centers. The degree of monetization in the economy is low. In 1956 the ratio of money to income was (.3) if time and saving deposits were included in the supply of money. Earnings in kind in the nonmonetized sector amounted in 1956 to ID 38.2 million or as much as 13 per cent or Iraq's national income in that year. Deposits per capita were low compared with the more developed countries, reflecting the undeveloped banking habits of the people. The security and money market is limited and the interest rate structure is unintegrated. Credit is extended mostly on overdraft basis rather than by discounting the customer's commercial paper. The government security market is narrow. The amount of the public debt outstanding is small and is largely held by the Central Bank of Iraq. The commercial bank holdings of government securities amounted to ID 2.5 million out of ID 27.3 million outstanding at the end of 1956. Banking in Iraq is typical of its counterparts in other similarly situated countries. Commercial banking institutions follow policies similar to what is found in other undeveloped economies. Generally speaking, these banks maintain a relatively liquid position in an environment subject to political and economic instability. There is much risk and uncertainty involved in the credit operations of the banking systems. Because exports are the main factor in the determination of the level of income, the level of economic activity is closely geared to the economic conditions abroad. And the liquidity of the banking system depends greatly on the state of foreign trade for the latter affects the credit base and the reserve position of the commercial banks.

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[*] A.B. 1951, American University at Beirut; M.B.A. 1954, Stanford University; D.B.A. conferred October 18, 1958. Research Advisory Committee: Wilson Emerson Schmidt, *Associate Professor of Economics, Chairman;* Arthur Edward Burns, *Professor of Economics;* James Carleton Dockeray, *Professor of Finance.*

The holding of large reserves by the commercial banks obviates borrowing by central banks. Consequently the effectiveness of the discount policies of the central banks tends to be limited. The narrowness of the security markets restricts the central banks in exerting influence on member banks' reserves through the sale and purchase of securities in the open market. Changes in legal reserve requirements seem more promising as a method of control because they bear directly on the reserve position of the banks.

The monetary authorities in the underdeveloped countries are faced not only with the problem of developing a sound banking system and preserving economic stability, but also with the task of maintaining a steady and high rate of economic growth. As the economy grows, the developing sectors must be supplied with the necessary means of payments to finance the increase in the transactions and to meet the rise in the demand for money for other purposes. The concentration of bank credit in the commercial sectors and the conservative credit policies of the banks make it necessary for many governments in the developing economies to supply long and medium term capital to industry and agriculture.

DEVELOPMENT OF THE BANKING AND MONETARY SYSTEM OF IRAQ

The development of the monetary system of Iraq followed closely the political changes in the country. From the Ottoman currency unit of the pre-First World War period, which was based on the bimetallic standard, Iraq's monetary unit was changed to that of the Indian rupee after the British occupation in 1917. This state of affairs continued until 1932 when the new Iraqi currency was introduced under the new autonomous rule. The new currency was the *dinar,* which was, and still is, equivalent to the pound sterling. A Currency Board was set up in London to manage the currency issue and to maintain the currency cover. In 1947, the present Central Bank of Iraq was established and took over the functions of the Currency Board and the control of the monetary and the banking system.

In the field of banking, the *sarrafs* were the sole operators in Iraq before 1890. They were, and still are, individual bankers with single proprietorship form of organization. They served the urban areas, while money lenders were, and still are, operating in the rural communities. The *sarrafs* dealt mainly with the traders in both domestic and foreign commerce. The money lenders, on the other hand, extended credit to the farmers and small agriculturalists. Both the money lenders and the *sarrafs* were operating on personal bases.

In 1890, the British Ottoman Bank opened branches in Iraq; this was the first attempt to establish a bank on a joint stock basis. More British banks were opened after the First World War. In 1941, the government of Iraq founded the Rafidain Bank which proved successful. After 1950, the government development programs induced more people to enter the field of banking on a large scale. Both foreign and indigenous banks expanded and increased their number, branches, and capital.

The government took several steps to fill the gap in medium and long term financing. In 1935, it established the Agricultural-Industrial Bank which was later separated into the Agricultural Bank and the Industrial Bank. By the early 1950's additional specialized financial institutions were set up by the government. These included the Mortgage Bank which started its operations in 1950, the Credit Mobilier, which is a small loan bank, and the Credit Cooperative Bank, which extends credit to cooperative societies.

ORGANIZATION OF THE BANKING SYSTEM

Two organizational features generally characterize the banking system in Iraq. First, the system is of the branch banking type, and second, it is patterned after the British banks in its organizational structure. The Central Bank of Iraq with its two departments, the Issue Department and the Banking Department is the chief illustration of the latter feature.

In 1950 a new law was enacted under which the banking system was brought under the control of the Central Bank of Iraq. It required banks to keep and invest in Iraq no less than 50 per cent of their deposit liabilities. Furthermore, the law made the government securities eligible as part of the legal reserve with the Central Bank. It also paid attention to questions relating to the liquidity, solvency, and supervision of the commercial banks.

Banks are required to be companies with limited liabilities and a minimum capital of ID 250,000. The *sarrafs* have different capital minima, depending on the area where they conduct their banking operations; they range from ID 12,000 in Baghdad to ID 10,000 in Basrah, ID 7,000 in Mosul, and ID 3,000 elsewhere. Moreover, a bank may not accept deposits in excess of 16 times its capital and reserves, and the *sarraf* may not carry deposits in excess of 7 times his capital and reserves.

A bank is not allowed to extend loans to one person which exceed 20 per cent of its paid-up capital and reserves. This percentage can be exceeded, however, under certain conditions specified in the law. Further provisions in the law are designed to insure the solvency of the banks.

Commercial banks are required to keep with the Central Bank of Iraq 15 per cent of their total deposits. One-third of these deposits may be in the form of government securities, the remainder, in cash.

Bank supervision under the law is entrusted to the Central Bank. The law, however, does not provide for a regular bank examination. Instead, the law leaves to the Central Bank the power to undertake the examination of a particular bank when it seems necessary.

The government development banks, established by the government, operate under special regulation laws. The government is usually represented on the Boards of Directors of the banks, and capital is provided by the government except in the case of the Cooperative Credit Bank which is jointly owned by the government and the cooperative societies.

OPERATIONS OF THE BANKING SYSTEM

Commercial banks in Iraq are relatively liquid. An indication of the liquidity of the Commercial banks in Iraq is the absence of bank borrowing from the Central Bank of Iraq. The lack of an adequately organized money market is an important reason for the banks' relative high liquidity. The political and economic instability of the country is another factor which has compelled banks to maintain large reserves and to follow conservative credit policies. Finally, the difficulty of finding domestic borrowers who would satisfy the requirements of the banks as to risk and profitability worked also in the same direction. In this respect, commercial banks in Iraq do not differ from their counterpart in other underdeveloped countries.

Commercial banks follow a conservative credit policy. The stringent conditions which they require of their customers make it difficult to find satisfactory borrowers. Most of the credit extended goes into financing foreign trade. Practically all commercial bank operations are confined to the commercial sector; commercial banks do not engage in industrial and agricultural credit.

Most of the loans are made on overdraft basis. Bills discounted amounted by the end of 1956 to only 28.9 per cent of the total loans outstanding as of that date. Total loans amounted to ID 32.8 million of which ID 9.9 million were extended against the customers' commercial paper. Loans are usually for short terms, payable within a period of one year or less, and, more often, within three to six months.

Advances are of two types: secured and unsecured. The type of security which banks are inclined to accept is one which is easily marketable in the real estate or money and security markets. Gold is another type of security used in Iraq. Chattel mortgages and bills of lading are also used by borrowers engaged in both internal and external trade. As of December 1956, secured loans constituted some 57.8 per cent of the total loans outstanding as of that date.

By the end of 1956, commercial banks charged 7 per cent, the maximum rate of interest, on both secured and unsecured loans. The short-term rates of interest rose over the period 1950–1956 due to the mount-

Savings are limited because of the low level of real income. The rich may save but the funds are usually invested unproductively in real estate or hoarded.

The direction of the public investment has been toward social overhead capital and long-term projects. Bank credit, on the other hand, has been flowing mostly into the commercial sector and much less into the agricultural and industrial investment. By March 31, 1956, of the total amount of bank credit outstanding, 84.8 per cent went into commerce, 8.3 per cent into agriculture, and 6.9 per cent into industry.

The rates of interest which government development banks have been charging on their loans are generally low, between 2 to 5 per cent, and they have been unable to satisfy the increasing demand for their funds on the part of industry and agriculture. Only a limited segment of the latter two sectors have been able to obtain credit from the government banks. Most of the small farmers and crafts have been left dependent on their own sources, on the money lenders, and on trade credit.

The banking system can expand its credit operations by substituting part of its foreign assets for additional domestic assets. This conclusion is based on the assumption that the banking system will maintain enough foreign reserves to meet any adversity in the country's balance of payments and yet be able to finance the increase in imports as a result of the expansion in credit. The determination of the potential credit expansion is based on a model developed by Mr. J. J. Polak under which it was possible to relate the country's foreign assets to its domestic assets as well as to the demand for money and the propensity to import. Under the assumptions of a given desired ratio of foreign reserves to imports, a given ratio of money to income, and a given average propensity to import, the total permissible expansion in bank credit was found to amount to ID 71.6 million. The ratio of money to income was estimated at (.3), while the average propensity to import was estimated at (.39). The desired ratio of foreign reserves to imports was given a value of (.5) which was deemed adequate to meet possible cyclical and/or seasonal movements in Iraq's balance of payments. These different values were substituted in the equation:

$$\frac{DA}{R} = \frac{a}{Km} - 1$$

where (a) is the ratio of money supply to national income, (m) is the average propensity to import, (K) is the desired ratio of foreign reserves to imports, DA is domestic assets, and (R) is foreign reserves. This equation is a derivation of two other equations, namely, $R = K (M/Y) Y$, and $MO = DA - R$, where MO is the supply of money. Dividing these two equations by each other yields the equation above. The ratio of DA/R was found to be (.54), and as (R) amounted to ID 132.6

million by December 31, 1956, total permissible credit expansion was estimated at ID 71.6 million (= .54 x 132.6). Of this ID 33.25 million was already in existence in the form of bank credit to the private sector. Permissible credit expansion under these conditions is shown by the difference between the maximum credit creation, that is ID 71.6 million, and the amount of domestic assets already created by the banking system or ID 33.25 million. Additional domestic assets can thus be created totalling ID 38.25 million (= ID 71.6 million — ID 33.25 million).

In order to counteract the possible inflationary threats which this credit expansion might lead to, the Central Bank of Iraq has to take the necessary precautionary measures to maintain economic stability internally and externally. This requires the strengthening of the general instruments of monetary control, particularly the reserve requirements. For purposes of economic growth, the Central Bank may also take the necessary steps to direct the new credit into those fields which are deemed desirable from the development point of view. In this respect, the bank may follow a qualitative credit policy which will encourage the direction of credit into the desired fields of investment.

In the field of long-term credit, certain institutional reforms might be introduced which will encourage the commercial banks to extend credit to industry and agriculture. The liquidity of the bank loans and the security of the bank depositors should be insured by providing discounting and insurance facilities. The creation of investment syndicates among the different commercial and development banks may prove useful in diversifying risk and protecting depositors as well as insuring the liquidity of the bank loans.

Conclusions

The Central Bank has to strengthen its monetary controls in the interest of stability and may have to follow a qualitative credit policy in the interest of growth. The banking system's participation in the development of the country in the past has not been substantial due to the concentration of bank credit in the commercial sector and the limited amount of capital resources at the disposal of the government development banks. The future role of the banking system in Iraq's economic development could be increased if proper measures were taken to augment the resources of the government banks and to protect the liquidity and solvency of the commercial banks.